Australian Government

Australian Pesticides and Veterinary Medicines Authority

Public Release Summary

on the evaluation of the new active constituent florylpicoxamid

in the product Telbek Adavelt active Fungicide

APVMA product number 88999

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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.

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Preface

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is the Australian Government regulator responsible for assessing and approving agricultural and veterinary chemical products prior to their sale and use in Australia. Before approving an active constituent and/or registering a product, the APVMA must be satisfied that the statutory criteria, including the safety, efficacy, trade, and labelling criteria, have been met. The information and technical data required by the APVMA to assess the statutory criteria of new chemical products, and the methods of assessment, must be consistent with accepted scientific principles and processes. Details are outlined on the APVMA website.

The APVMA has a policy of encouraging transparency in its activities and seeking community involvement in decision making. Part of that process is the publication of Public Release Summaries for products containing new active constituents. This Public Release Summary is intended as a brief overview of the assessment that has been conducted by the APVMA and of the specialist advice received from advisory agencies, including other Australian Government agencies and State departments of primary industries. It has been deliberately presented in a manner that is likely to be informative to the widest possible audience to encourage public comment.

About this document

This Public Release Summary indicates that the APVMA is considering an application for registration of an agricultural or veterinary chemical. It provides a summary of the APVMA's assessment, which may include details of:

- the toxicology of both the active constituent and product
- the residues and trade assessment
- occupational exposure aspects
- environmental fate, toxicity, potential exposure and hazard
- efficacy and target crop or animal safety.

Comment is sought from interested stakeholders on the information contained within this document.

Making a submission

In accordance with sections 12 and 13 of the Agvet Code, the APVMA invites any person to submit a relevant written submission as to whether the application for registration of Telbek Adavelt active Fungicide 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 matters include aspects of public health, occupational health and safety, chemistry and manufacture, residues in food, environmental safety, trade, and efficacy and target crop or animal safety. Submissions should state the grounds on which they are based. Comments received that address issues outside the relevant matters cannot be considered by the APVMA.

Submissions must be received by the APVMA by close of business on 8 February 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 the product should be registered 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:

Case Management and Administration Unit

Australian Pesticides and Veterinary Medicines Authority

GPO Box 3262

Sydney NSW 2001

Phone: +61 2 6770 2300

Email: casemanagement@apvma.gov.au

Further information

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

Copies of technical evaluation reports covering chemistry, efficacy and safety, toxicology, occupational health and safety aspects, residues in food and environmental aspects are available from the APVMA on request.

Further information on Public Release Summaries can be found on the APVMA website.

Introduction

This publication provides a summary of the data reviewed and an outline of the regulatory considerations for the proposed registration of Telbek Adavelt active Fungicide and approval of the new active constituent, florylpicoxamid.

Applicant

Corteva Agriscience Australia Pty Ltd.

Purpose of application

Corteva Agriscience Australia Pty Ltd has applied to the APVMA for registration of the new product Telbek Adavelt active Fungicide, containing 100 g/L florylpicoxamid, as an emulsifiable concentrate (EC) formulation.

Proposed claims and use pattern

The product, Telbek Adavelt active Fungicide, is proposed for the control of septoria tritici blotch in wheat at 300 to 400 mL/ha for up to 2 applications per crop.

Mode of action

Florylpicoxamid is a Group 21 fungicide having the quinone inside inhibitor (QiI) mode of action, in a new chemical family, the picolinamides. Florylpicoxamid targets the quinone ‘inside’ (Qi) binding site of the mitochondrial cytochrome bc_1 complex.

Overseas registrations

The active constituent florylpicoxamid is currently registered in Korea for use on roses. Telbek Adavelt active Fungicide is the first agricultural registration of a florylpicoxamid product anywhere in the world.

Chemistry and manufacture

Active constituent

The active constituent florylpicoxamid is manufactured overseas. Details of the chemical name, structure, and physicochemical properties of florylpicoxamid are listed below (Tables 1 and 2).

Florylpicoxamid is an off-white solid. It is essentially insoluble in water, with no significant variation in the solubility observed based on the pH. The vapour pressure (less than 5×10^{-6} Pa) and the Henry's law constant ($<6\times10^{-4}$ Pa.m^3/mol) indicates that volatilisation is not expected to be a significant route of dissipation for florylpicoxamid. There are no flammable, explosive, self-ignition, and/or oxidizing properties of safety concern for florylpicoxamid.

Table 1: Nomenclature and structural formula of the active constituent florylpicoxamid

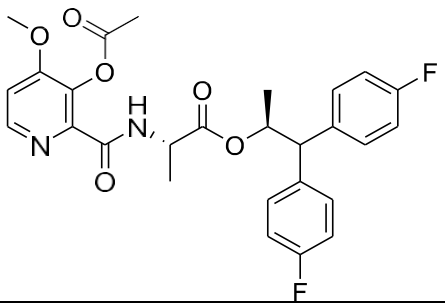
Common name (ISO):	Florylpicoxamid
IUPAC name:	(2*S*)-1,1-bis(4-fluorophenyl)propan-2-yl *N*-{[3-(acetyloxy)-4-methoxypyridin-2-yl]carbonyl}-L-alaninate
CAS registry number:	1961312-55-9
Molecular formula:	$C_{27}H_{26}F_2N_2O_6$
Molecular weight:	512.51 g/mol
Structural formula:	

Table 2: Key physicochemical properties of the active constituent florylpicoxamid

Physical form:	Solid (fine powder)
Colour:	Off white
Odour:	None discernible
Melting point:	91.0 to 95.5°C
Boiling point:	The test substance decomposes at ~150°C without boiling
Density	1.28 g/mL at 20°C
Stability:	In an accelerated model at temperature, <5% decomposition of the active is observed after 2 weeks storage at 54°C. Technical florylpicoxamid is expected to be stable during storage under normal conditions for at least 2 years.
Safety properties:	Not considered flammable. Not explosive. No self-ignition observed. Florylpicoxamid technical is slowly oxidised by potassium permanganate. Other than this it does not show any chemical incompatibility with reducing or fire extinguishing agents and is essentially non-hazardous.
Solubility in water:	4.0 mg/L at 20ºC pH 5 buffer: 3.2 mg/L pH 7 buffer: 3.1 mg/L pH 9 buffer: 3.0 mg/L
Organic solvent solubility:	Methanol >250 g/L Acetone >250 g/L n-heptane 0.19 g/L Ethyl acetate >250 g/L Xylene >250 g/L 1,2-dichloroethane >250 g/L n-octanol 8.3 g/L
PH:	5.4 for a 1% w/v dilution
Octanol/water partition coefficient:	Log Pow= 4.2 at pH 5 Log Pow= 4.2 at pH 7 Log Pow= 4.3 at pH 9
Vapour pressure:	less than 5×10^{-6} Pa at 20°C
Henry's law constant:	$<6\times10^{-4}$ Pa.m^3/mol (calculated)
UV/VIS absorption spectra:	λ_{max}= 265 nm λ_{max}= 271 nm

Formulated product

The product Telbek Adavelt active Fungicide will be manufactured overseas. Tables 3 and 4 outline some key aspects of the formulation and physicochemical properties of the product.

Telbek Adavelt active Fungicide will be available in 1 to 110 L HDPE (high density polyethylene) containers.

Table 3: Key aspects of the formulation of the product Telbek Adavelt active Fungicide

Distinguishing name:	Telbek Adavelt active Fungicide
Formulation type:	Emulsifiable concentrate (EC)
Active constituent concentration:	100 g/L florylpicoxamid

Table 4: Physicochemical properties of the product Telbek Adavelt active Fungicide

Physical form:	Clear yellow liquid with a mild odour (at 21.5°C)
PH:	4.37 at 19.4°C in a 1.02% w/w solution
Specific gravity/density:	1.0043 g/mL at 20.0°C
Kinematic viscosity:	Newtonian: 31.4 mPa·s at 20.0°C 16.1 mPa·s at 40.0°C
Persistent Foam:	0 mL at 1 minute
Emulsion characteristics, 20 and 342 ppm, 0.05% v/v and 3.0% v/v use rate:	No cream and no oil after 2 hours
Safety properties:	Not classified as a flammable liquid, explosive, or an oxidising substance.
Storage stability:	There were sufficient data to conclude that the product is expected to remain within specifications for at least 2 years when stored under normal conditions

Recommendations

The APVMA Chemistry section has evaluated the chemistry of the active constituent florylpicoxamid and associated product Telbek Adavelt active Fungicide – including the manufacturing process, quality control procedures, stability, batch analysis results and analytical methods – and found them to be acceptable. The available storage stability data indicate that the formulated product is expected to remain stable for at least 2 years when stored under normal conditions.

Toxicological assessment

A full data package was submitted for florylpicoxamid. The assessment of the data concluded there are no objections on human health grounds to the approval of florylpicoxamid.

Evaluation of toxicology

Chemical class

Florylpicoxamid is a new fungicide that acts via quinone inside inhibitor disruption of the fungal mitochondrial electron transport system complex III. Florylpicoxamid has not previously been approved in Australia or overseas for agricultural uses, however the related neopicolinamide fungicide, fenpicoxamid, was approved in the EU in March 2020.

Pharmacokinetics

The oral absorption of florylpicoxamid was up to 33% in rodents and up to 77% in rabbits. In rats, systemic absorption and tissue distribution was low, and tissue elimination was largely complete by 168 hours post-dose (<1% of administered radioactivity present in tissues). Florylpicoxamid was extensively metabolised in rats with 11 identified or tentatively identified metabolites in excreta. Following oral dosing, hepatic first pass metabolism in rats was effectively complete. Most major metabolites were detected in faeces (X12485473, X12493055, X12632407, X12485631, and deacetylated florylpicoxamid). No florylpicoxamid and deacetylated florylpicoxamid stereoisomer shifts of biological importance occurred in faeces. In urine, 2 major metabolites (X12485473 and X12641325, up to 38% and 8% of the dose, respectively) were present. In rodents, florylpicoxamid-derived radioactivity in faeces accounted for approximately 52 to 91% of the dose, while in urine it accounted for up to about 33% of the dose. In all species, elimination in faeces and urine was rapid, and mostly complete by 48 hrs.

Acute toxicity (active constituent)

Florylpicoxamid had low acute oral, dermal, and inhalation toxicity. Florylpicoxamid was not irritating to the skin and was not a skin sensitiser, but was slightly irritating to the eye.

Acute toxicity (product)

Telbek Adavelt active Fungicide had low acute oral, dermal, and inhalation toxicity. The product was not irritating to the skin and was not a skin sensitiser but was a severe eye irritant.

Repeat-dose toxicity

The main common effects observed in mice, rats, dogs, and rabbits exposed to high oral doses florylpicoxamid were decreased feed consumption; adverse bodyweight/bodyweight gain effects; and gastrointestinal disturbance, ranging from sporadically reduced faeces to extensively watery faeces. Rodents appeared less sensitive than dogs and rabbits to florylpicoxamid effects on the gastrointestinal tract, mice were the least sensitive species to observed florylpicoxamid effects.

The no observed adverse effect level (NOAEL) in a 90-day repeat dose oral toxicity study was reported at the highest dose of 192 mg/kg bw/day in males, and 201 mg/kg bw/day in females. In a 28-day repeat dose oral toxicity study in rats, the NOAEL was reported at 84 mg/kg bw/day due to observations of decreased feed consumption and decreased bodyweight gain, as well as reduced erythrocyte mass at the highest dose of 230 mg/kg bw/day. In a 90-day repeat dose oral toxicity in rats, the NOAEL was reported at 59 mg/kg bw/day based on adverse bodyweight and bodyweight gain effects, as well as slightly reduced erythrocyte mass at the highest dose of 177 mg/kg bw/day. In a 13-week oral toxicity study in dogs administered florylpicoxamid once daily in gelatine capsules, a NOAEL of 400 mg/kg bw/day (highest dose) was reported, although faecal irregularities were observed in the mid-dose of 150 mg/kg bw/day. These were not associated with any other adverse effects and were considered to be non-adverse results of treatment.

Chronic toxicity and carcinogenicity

Chronic dietary studies were conducted in mice and rats. In an 18-month chronic oral toxicity study in mice, a NOAEL of 172 mg/kg bw/day was reported at the highest dose tested for systemic toxicity and carcinogenicity in males. In female mice, a lowest observed adverse effect level (LOAEL) for systemic toxicity was reported at 230 mg/kg bw/day, based on increased mortality at that dose. The NOAEL for systemic toxicity and carcinogenicity in female mice was reported at 72 mg/kg bw/day. In a 24-month chronic oral toxicity study, a NOAEL of 123 mg/kg bw/day was reported at the highest dose tested for systemic toxicity and carcinogenicity in males. In female rats, the NOAEL for carcinogenicity in female rats was at the highest dose of 200 mg/kg bw/day. A LOAEL for systemic toxicity was reported at 47 mg/kg bw/day based on decreased bodyweight and the NOAEL for female rats was reported at 14 mg/kg bw/day for systemic toxicity.

Reproductive and developmental toxicity

In a 2 generation dietary reproductive toxicity study in rats, florylpicoxamid did not adversely affect reproduction or survival. A parental NOAEL of approximately 58 mg/kg bw/day was established based on decreased bodyweight in mothers in the second generation at the high dose of 179 mg/kg bw/day. A NOAEL for offspring was determined to be 58 mg/kg bw/day based on slightly reduced erythrocyte mass and high platelet counts at the high dose of 179 mg/kg bw/day.

In a prenatal development toxicity study in rats, the NOAEL for maternal toxicity was 73 mg/kg bw/day with the high dose group (271 mg/kg bw/day) reporting decreased feed consumption and decreased bodyweight. The NOAEL for foetal toxicity was determined to be 271 mg/kg bw/day (the highest dose).

In a rabbit developmental toxicity study, maternotoxicity – manifesting as decreased body weight, reduced feed consumption and gastrointestinal disturbance, abortion, and bleeding – was reported in the highest dose group at 26 mg/kg bw/day. The NOAEL for maternal toxicity in rabbits was approximately 10 mg/kg bw/day and for developmental toxicity was 26 mg/kg bw/day.

Genotoxicity

Florylpicoxamid was found not to be genotoxic in a battery of *in vitro* and *in vivo* assays and did not induce neoplasia in near lifetime exposure studies in rats and mice.

Neurotoxicity/immunotoxicity

Florylpicoxamid was not considered to present a neurotoxic hazard based on the weight of evidence. There were no signs of immunotoxicity across the florylpicoxamid control and treatment groups in the studies assessed, including a conclusive anti-SRBC-ELISA test.

Toxicity of metabolites and/or impurities

Absorption, distribution, metabolism, and elimination of florylpicoxamid, its stereoisomers, and their metabolites, have been documented after single or repeated administrations in multigenerational and developmental studies. Toxicological consideration of impurities listed in the declaration of composition (DoC), including metabolites, did not raise additional toxicological concerns in the evaluation of florylpicoxamid.

Reports related to human toxicity

Products containing florylpicoxamid have not yet been commercialised. Therefore, human exposure to florylpicoxamid has, so far, been limited to personnel involved in research and development associated with the active and the commercial product. No adverse health effects have been attributed to florylpicoxamid exposure to these personnel.

Health based guidance values and poisons scheduling

Poisons Standard

Florylpicoxamid is included in Appendix B of the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

The product, Telbek Adavelt active Fungicide, contains 381 g/L N,N-dimethyl decanamide, which is in schedule 6 of the SUSMP with no exception or concentration cut off. Therefore Telbek Adavelt active Fungicide is a schedule 6 product and requires the signal heading POISON on the product label.

Health based guidance values

Florylpicoxamid and deacetylated florylpicoxamid (CAS: 1961312-07-1) were considered to be toxicologically equivalent. For the purpose of health based guidance values, florylpicoxamid was defined as the sum of: florylpicoxamid (CAS: 961312-55-9), deacetylated florylpicoxamid (X12485649, CAS: 1961312-07-1), and their SR stereoisomers, expressed as florylpicoxamid.

Acceptable daily intake

An acceptable daily intake (ADI) for florylpicoxamid was established at 0.1 mg/kg bw/day, based on a NOAEL of 10 mg/kg bw/day for maternal toxicity in a rabbit developmental toxicology study and a total uncertainty factor of 100, supported by a NOAEL of 14 mg/kg bw/day in a 2-year rat dietary toxicity study.

Acute reference dose

An acute reference dose (ARfD) for florylpicoxamid was considered to be unnecessary on the basis of its low acute toxicity, the lack of evidence for any acute neurotoxicity, and the absence of any other toxicologically relevant effect that might be attributable to a single dose.

Recommendations

There are no objections on human health grounds to the approval of florylpicoxamid.

There are no objections on human health grounds to the registration of Telbek Adavelt active Fungicide containing 100 g/L florylpicoxamid.

Residues assessment

As part of the residues assessment of florylpicoxamid, plant and animal metabolism studies, supervised residue trial data for wheat, analytical methodology, fate in storage and processing data, and residues in trade information were considered.

Metabolism

The metabolism and distribution of florylpicoxamid (XDE-659) was investigated in plants (wheat, tomatoes and lettuce and rotational crops) and animals (lactating goats and laying hens) using florylpicoxamid labelled in the phenyl (PH) or pyridine (PY) moieties.

Plants

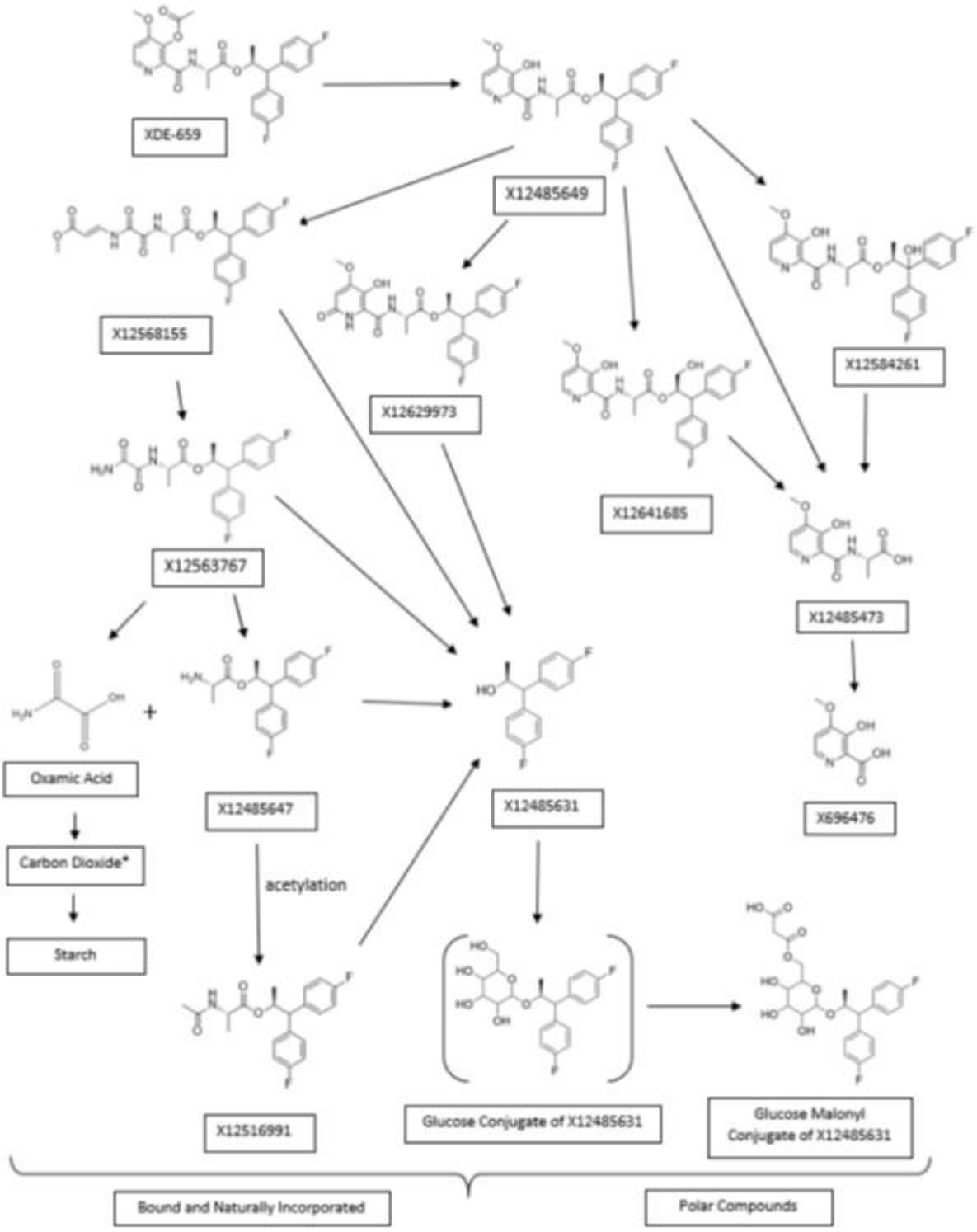
In wheat, 2 applications of labelled florylpicoxamid were made at BBCH 32 and 69 (total seasonal rate 119 g a.c./ha for PH and PY labels). Parent florylpicoxamid and the metabolite X12485649 were identified in wheat forage accounting for 6% total radioactive residue (TRR) (0.035 to 0.039 mg/kg) and 13 to 15% TRR (0.081 to 0.087 mg eq./kg) respectively; hay at 1% TRR (0.033 to 0.042 mg/kg) and 13 to 14% TRR (0.359 to 0.383 mg eq./kg; and in straw at 2% TRR (0.052 to 0.053 mg/kg) and 6% TRR (0.13 to 0.15 mg eq./kg). Neither compound was observed in grain. Of the other identified metabolites observed at >10% TRR, X12675171 (or its isomer) was present in forage at 24% TRR (0.16 mg eq./kg, PH label) and X12563767 was present in straw at 12% TRR (0.29 mg eq./kg, PY label).

In tomatoes, 5 foliar applications of florylpicoxamid (150 g a.c./ha each) were made at weekly intervals. Parent florylpicoxamid and the metabolite X12485649 were identified in all tomato matrices accounting for 6 to 11% TRR (0.12 to 0.21 mg/kg) and 48 to 58% TRR (0.98 to 1.1 mg eq./kg) respectively in immature plants; 34 to 39% TRR (0.044 to 0.067 mg/kg) and 37 to 41% TRR (0.046 to 0.073 mg eq./kg) in 1-day post-harvest interval (PHI) mature fruit; 31 to 35% TRR (0.014 to 0.015 mg/kg) and 35 to 36% TRR (0.014 to 0.017 mg eq./kg) in 7-day PHI mature fruit; 31 to 37% TRR (0.019 to 0.034 mg/kg) and 18 to 19% TRR (0.011 to 0.017 mg eq./kg) in 14-day PHI mature fruit; and 37 to 50% TRR (0.60 to 0.77 mg/kg) and 20% TRR (0.30 to 0.32 mg eq./kg) in 14-day PHI mature vines. No other metabolite was present in any tomato matrix at >10% TRR.

In lettuce, 5 foliar applications of florylpicoxamid (150 g a.c./ha each) were made at minimum weekly intervals. Parent florylpicoxamid and the metabolite X12485649 were identified in all lettuce matrices accounting for 31 to 37% TRR (0.52 to 0.84 mg/kg) and 38 to 39% TRR (0.64 to 0.86 mg eq./kg) respectively in immature plants; 39 to 40% TRR (1.1 to 1.3 mg/kg) and 40 to 46% TRR (1.3 mg eq./kg) in 1 day after last application (DALA) mature lettuce; and 26 to 27% TRR (0.43 to 0.54 mg/kg) and 35 to 38% TRR (0.62 to 0.68 mg eq./kg) in 8 DALA mature lettuce. No other metabolite was present in any lettuce matrix at >10% TRR.

No parent was detected in any sample analysed in the confined rotational crops study. The major residues taken up in succeeding crops were multicomponent and it was concluded that individual metabolites would be expected at low levels (<0.01 mg eq./kg in foods) for crop uses up to 2×50 g a.c./ha (the current proposal for use on wheat is for a maximum of 2 applications at up to 40 g a.c./ha) at all plant-back intervals.

Figure 1: The metabolism pathway for florylpicoxamid in wheat



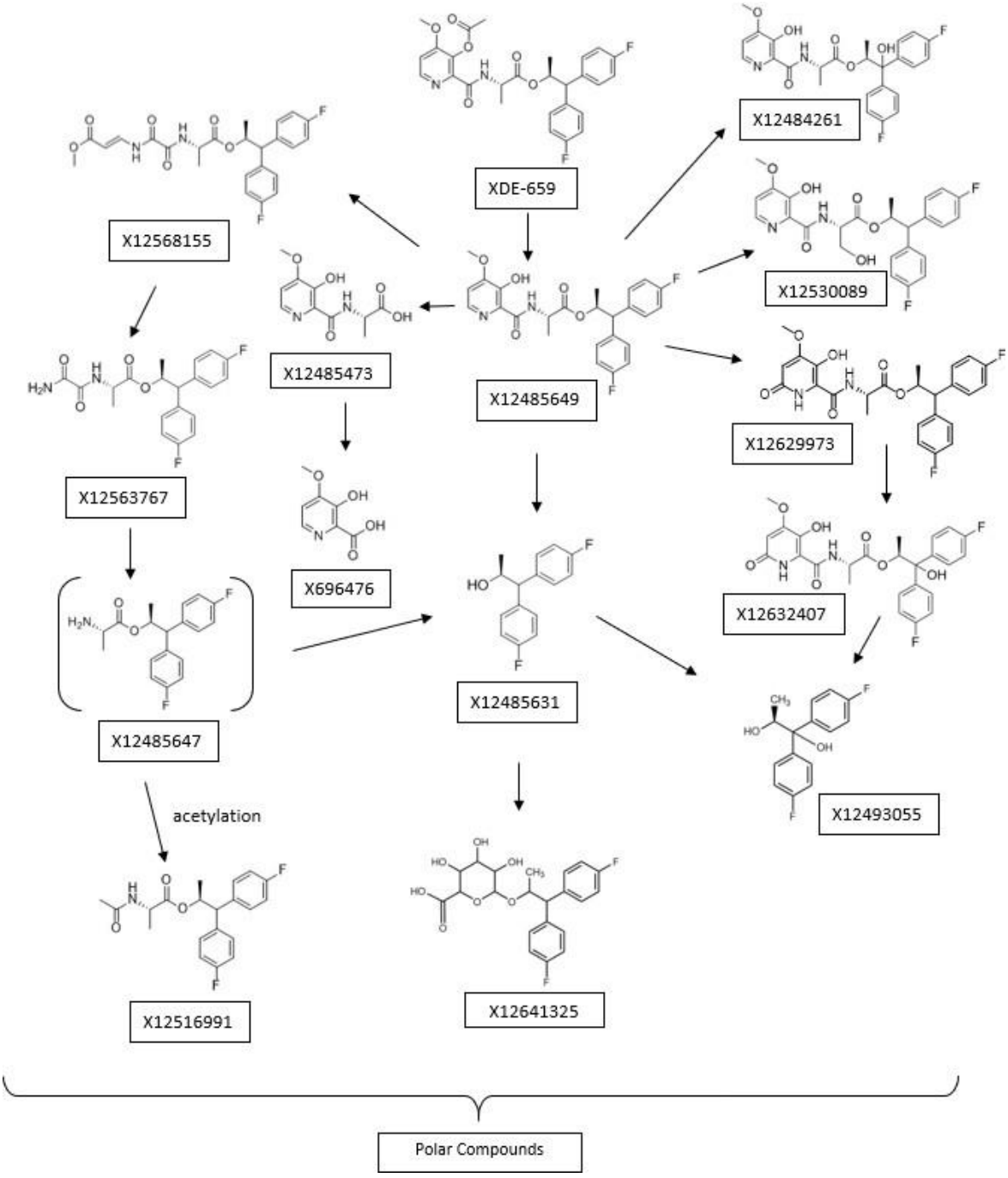
Animals

Residues in combined eggs (PH label) were mainly composed of X12485649 at 3 to 15% TRR (0.001 to 0.002 mg eq./kg); X12485631 at 4 to 13% TRR (0.002 mg eq./kg); and X12563767 at 0 to 13% TRR (0 to 0.002 mg eq./kg).

Residues of parent florylpicoxamid were only observed in hen skin with fat (PH label only, 2% TRR, 0.003 mg/kg). Metabolite X12485649 was the major component of fat at 20 to 40% TRR (0.011 to 0.012 mg eq./kg) and was also observed in leg muscle at 17 to 19% TRR (0.008 to 0.011 mg eq./kg); breast muscle at 6 to 17% TRR (0.002 to 0.007 mg eq./kg); skin with fat at 11 to 14% TRR (0.012 to 0.022 mg eq./kg); and to a lesser extent in liver at 1% TRR (0.003 to 0.005 mg eq./kg). Metabolite X12629973 was the major component of breast muscle at 47 to 50% TRR (0.017 to 0.022 mg eq./kg); skin with fat at 14 to 23% TRR (0.014 to 0.034 mg eq./kg); leg muscle at 23 to 26% TRR (0.011 to 0.015 mg eq./kg); and in liver at 4 to 6% TRR (0.008 to 0.023 mg eq./kg). It was not observed in fat. Of the other observed metabolites in tissues, no other components were observed above both 10% TRR and 0.01 mg eq./kg.

Residues of parent florylpicoxamid were not observed in any goat matrix. Metabolite X12485649 was the major component of milk at 16 to 36% TRR (0.002 to 0.004 mg eq./kg). No other identified component of milk was present at >10% TRR. X12485649 was also present as the major component in all tissues: liver at 18 to 33% TRR (0.027 to 0.059 mg eq./kg); kidney at 21 to 46% TRR (0.006 to 0.009 mg eq./kg); flank muscle at 82 % TRR (0.013 mg eq./kg); omental fat at 65 to 78% TRR (0.033 to 0.042 mg eq./kg); subcutaneous fat at 77 to 82% TRR (0.030 to 0.042 mg eq./kg); and renal fat at 74 to 82% TRR (0.033 to 0.038 mg eq./kg). Of the other observed metabolites, no other components were observed above both 10% TRR and 0.01 mg eq./kg.

Figure 2: The metabolism pathway for florylpicoxamid in laying hens



Analytical methods and storage stability

The metabolic pathway was consistent between the 3 primary crops (wheat, tomatoes and lettuce), with the primary components being parent and the metabolite X12485649. In the residue field trials for wheat, parent florylpicoxamid and X12485649 were generally the predominant residues.

No other metabolite observed at >10% TRR was seen in more than one of the primary crop metabolism studies. Therefore, apart from parent and X12485649, there are no other obvious candidates for a residue definition encompassing all 3 primary crops, as well as rotational crops.

A number of suitable analytical methods have been validated to determine residues of parent florylpicoxamid and metabolites in plant and processed commodities.

Based on the available information, the sum of parent florylpicoxamid and X12485649, expressed as florylpicoxamid is considered to be the appropriate residues definition for commodities of plant origin for both enforcement and dietary risk assessment.

In the submitted Australian wheat trials, residues of parent florylpicoxamid and its major metabolites were determined using either Method A ("Determination of Residues of XDE-659 and Relevant Analytes in Agricultural Commodities Using Liquid Chromatography with Tandem Mass Spectrometry"), for the determination of florylpicoxamid (XDE-659) and X12485649 in the 2017 trials or Method B ("An Analytical Method for the Determination of XDE-659 and its Metabolites X12485649, X12563767, X12641685 and X12717067 in Crop Matrices"), for the determination of florylpicoxamid (XDE-659), X12485649, X12563767, X12641685, and X12717067 in the 2017 and 2018 trials.

Method A (florylpicoxamid and X12485649): Florylpicoxamid (XDE-659) and X12485649 residues were extracted 3 times from each blended homogenous sample with acetonitrile: water: phosphoric acid. The extracts were combined and an aliquot was taken, a small amount of keeper (glycerin:MeOH) added, and then evaporated to the aqueous remainder. Acidified water was added to the extract, which was then loaded onto a Strata-X SPE cartridge. Residues were eluted with acetonitrile: water: phosphoric acid in a LC vial. Residues of florylpicoxamid and its metabolites were determined by liquid chromatography coupled with a tandem mass spectrometer (LC-MS/MS) using external matrix standards.

Method B (florylpicoxamid, X12485649, X12563767, X12641685 and X12717067): Residues of florylpicoxamid and its metabolites were extracted 3 times from each blended homogeneous sample with acetonitrile: water: phosphoric acid. The extracts were combined and made to volume.

For florylpicoxamid and the metabolites X12485649, X12563767 and X12641685, an aliquot of the extract was taken and diluted with water. This was cleaned up using Strata-X Polymeric Reversed Phase solid phase extraction (SPE). Residues were eluted from the column with 2 aliquots of acetonitrile. The eluate was diluted with water and analysed by liquid chromatography coupled with a tandem mass spectrometer (LC-MS/MS) using external matrix standards. For X12717067, an aliquot of the initial extract was taken and diluted with water. This was purified using Oasis HLB reversed phase SPE. Residues were eluted with 2 aliquots of acetonitrile: water then evaporated to near dryness and reconstituted in water. Residues were further purified using Bond Elut SAX SPE. Residues were eluted with water containing 2% formic acid and

analysed by liquid chromatography coupled with a tandem mass spectrometer (LC-MS/MS) using external matrix standards.

This method was also used in the submitted European residues trials and in the storage stability study for the determination of residues of parent florylpicoxamid and its major metabolites (X12485649, X12563767, X12641685 and X12717067).

The limit of quantitation (LOQ) of each method and the limit of detection (LOD) in wheat forage, grain, and stubble were determined as 0.01 mg/kg and 0.003 mg/kg respectively for XDE-659 and its metabolites. Recoveries from fortified samples were within acceptable limits.

A number of other submitted validated analytical methods were submitted for the determination of residues of florylpicoxamid and X12485649 in plant and animal commodities. Techniques include LC/MS and LC-MS/MS, with LOQs generally 0.01 mg/kg. Recoveries from fortified samples were within acceptable limits. A multi-residue method for the determination of residues in plant and animal matrices with extraction with QuEChERS-based method (acetonitrile and water with dehydration salts) prior to injection, was found to be suitable for the determination of parent florylpicoxamid and X12485649 residues in plant and animal matrices.

Residue definition

Commodities of plant origin

The metabolic pathway was consistent between the 3 primary crops (wheat, tomatoes and lettuce), with the primary components being parent and the metabolite X12485649. In the residue field trials for wheat, parent florylpicoxamid and X12485649 were generally the predominant residues.

No other metabolite observed at >10% TRR was seen in more than one of the primary crop metabolism studies. Therefore, apart from parent and X12485649, there are no other obvious candidates for a residue definition encompassing all 3 primary crops, as well as rotational crops.

A number of suitable analytical methods have been validated to determine residues of parent florylpicoxamid and metabolites in plant and processed commodities.

Based on the available information, the sum of parent florylpicoxamid and X12485649, expressed as florylpicoxamid is considered to be the appropriate residues definition for commodities of plant origin for both enforcement and dietary risk assessment.

Commodities of animal origin

A suitable analytical method is available to determine residues of X12485649 in animal commodities and florylpicoxamid and the metabolite X12485649 were considered toxicologically equivalent.

Based on the available information, the metabolite X12485649 expressed as florylpicoxamid is considered to be the appropriate residues definition for commodities of animal origin for both enforcement and dietary risk

assessment. The inclusion of parent florylpicoxamid in the residue definition for animal commodities is not considered necessary as metabolism and animal transfer studies for both poultry and ruminants demonstrated that parent florylpicoxamid is not expected in animal tissues, milk, or eggs.

Residues in food and animal feeds

Australian and European GLP residues trial data for wheat were submitted.

Grain

In 10 trials conducted on wheat in Australia in 2017 and 2018, according to or approximating GAP, no residues above the combined LOQ of 0.02 mg/kg were detected in wheat grain at harvest, 29 to 74 days after the last application of florylpicoxamid at BBCH 69. No detectable residues were observed in 7 of the 10 trials.

In 17 trials conducted on wheat in the USA in 2018 and 2019 (2 formulations were applied in 8 trials in 2018), according to or approximating GAP, no quantifiable residues of florylpicoxamid were observed in wheat grain at harvest, 28 to 62 days after the last application of florylpicoxamid at BBCH 69. No detectable residues were observed in 16 of the 17 trials.

Noting the scaled result at 0.018 mg/kg in one Australian trial, which is close to the combined LOQ of 0.02 mg/kg, a florylpicoxamid Maximum Residue Limit (MRL) of 0.02 mg/kg for GC 0654 wheat is considered appropriate to cover residues in wheat grain arising from the proposed use in conjunction with the proposed harvest withholding period of “Not required when used as directed” and the proposed label statement of ‘DO NOT apply after Z69 (end of flowering)’.

A processing factor of 2.8 was estimated for wheat bran. Based on the highest residues (HR) in wheat grain (0.018 mg/kg), the highest predicted residue value (HR-P) in wheat bran is 0.05 mg/kg.

A florylpicoxamid MRL of 0.07 mg/kg is recommended for CM 0654 wheat bran, unprocessed.

Straw

In 10 Australian trials and 16 USA trials conducted according to or approximating GAP, dry weight total residues observed in straw at harvest (28 to 74 days after the last application at BBCH 69) were, in rank order:

<0.018, 0.022, 0.023, 0.026, 0.030 (2), 0.031, 0.049 (2), 0.078, 0.11, 0.12, 0.15, 0.18 (3), 0.19, 0.23, 0.26, 0.40, 0.78, 0.79, 0.83, 1.07, 1.19 and 1.28 mg/kg (STMR= 0.165 mg/kg, n= 26).

A florylpicoxamid MRL of 2 mg/kg is recommended for AS 0654 wheat straw and fodder, dry.

Forage

In 10 Australian trials and 16 USA trials conducted according to or approximating GAP, dry weight total residues observed in forage 13 to 15 days after the last application were, in rank order:

<0.064 (2), 0.14 (2), 0.17, 0.19, 0.38, 0.48, 0.58, 0.72, 0.78, 0.92, 0.94, 0.95, 1.02, 1.13, 1.17 and 3.22 mg/kg (STMR= 0.65 mg/kg, n= 18).

A florylpicoxamid MRL of 5 mg/kg is recommended for wheat forage, in conjunction with proposed grazing withholding period of 14 days.

Crop rotation

The results of the submitted confined rotational study showed that no quantifiable residues of individual metabolites are expected in various rotational crops/matrices (2×50 g a.c./ha). Noting that the current proposal for use on wheat, is for a maximum of 2 applications at up to 40 g a.c./ha, it is considered unlikely that quantifiable residues of florylpicoxamid would be present in succeeding crops as a result of the proposed use. No plant-back interval is considered to be necessary from a residues and trade perspective, nor are MRLs required to cover following crops or animal feeds.

Residues in animal commodities

A lactating dairy cow feeding study was conducted to determine the magnitude of residues of florylpicoxamid and its associated metabolites in milk and tissues during or following oral exposure to the active ingredient at target dose levels corresponding to 3 ppm, 6 ppm, 18 ppm, and 60 ppm in the feed (dry weight basis) daily for 29 consecutive days.

For beef cattle, the estimated maximum livestock burden for florylpicoxamid is 3.22 ppm, based on a diet of 100% wheat forage. For dairy cattle, the estimated maximum livestock burden for florylpicoxamid is 2.19 ppm, based on a diet of 60% wheat forage, 20% wheat straw, and 20% wheat milled by-products.

The supported residue definition for animal commodities is X12485649, expressed as florylpicoxamid. Predicted residues of X12485649 in tissues and milk as a result of feeding at these levels are calculated below based on extrapolation from highest residues observed in the feeding study after feeding at 3.15 ppm.

Table 5: Required mammalian commodity MRLs - cattle

Feeding level (ppm)	Milk	Muscle	Liver	Kidney	Fat
	X12485649 residues as parent equivalents (mg/kg)**				
3.15 – Lactating dairy cow feeding study	ND	ND	0.009	0.003	0.012
3.22 – beef, estimated burden	-	ND	0.009	0.003	0.013
2.19 – dairy, estimated burden	ND	-	-	-	-
Recommended MRLs	*0.01	-		0.02 (offal)	0.02 (meat [in the fat])

* Limit of quantitation (LOQ)

** Residues in X12485649×100/91.8 to convert to equivalent residues of parent florylpicoxamid

The following MRLs are recommended:

MO 0105 edible offal (Mammalian):0.02 mg/kg

MM 0095 meat (mammalian) [in the fat]: 0.02 mg/kg

ML 0106 milks: *0.01 mg/kg

Quantifiable residues of florylpicoxamid are not expected in wheat grain so residues would not be expected to occur in eggs or poultry tissues as a result of the proposed use. The likelihood of detectable residues occurring in poultry commodities as a result of the proposed use is therefore low. It is appropriate to establish poultry commodity MRLs at the LOQ of metabolite X12485649 in the analytical methods to satisfy the proposed residue definition for animal commodities. As the validated LOQ for X12485649 in poultry tissues and eggs is 0.01 mg/kg, the following MRLs are recommended:

PE 0112 Eggs: *0.01 mg/kg

PM 0110 Poultry meat [in the fat]: *0.01 mg/kg

PO 0111 Poultry, edible offal of: *0.01 mg/kg

Bioaccumulation potential

The log Pow value for florylpicoxamid at 20°C is 4.2 at pH 5 and pH 7 and 4.3 at pH 9, indicating moderate fat solubility and potential for bioaccumulation.

The log Pow value for X12485649 at 20°C is 3.5 at pH 5 and pH 7 and 3.4 at pH 9, indicating moderate fat solubility and potential for bioaccumulation.

The lactating goat metabolism study found that florylpicoxamid TRRs were higher in fats compared with muscle (with higher amounts of the X12485649 metabolite). The lactating goat feeding study showed

quantifiable residues of X12485649 in fat at all feeding levels, whereas it was only observed in muscle in the highest feeding level samples.

MRLs for mammalian and poultry meat will be recommended as 'in the fat'.

Spray drift

The regulatory acceptable level (RAL) for livestock areas is 2.30 ppm. See the Spray Drift and Label Recommendations sections for details of the relevant restraints and buffer zones.

Dietary risk assessment

The chronic dietary exposure to florylpicoxamid is estimated by the National Estimated Daily Intake (NEDI) calculation encompassing all registered/temporary uses of the chemical and the mean daily dietary consumption data derived primarily from the 2011–12 National Nutritional and Physical Activity Survey. The NEDI calculation is made in accordance with WHO Guidelines1 and is a conservative estimate of dietary exposure to chemical residues in food. The NEDI for florylpicoxamid is equivalent to <1% of the ADI.

It is concluded that the chronic dietary exposure of florylpicoxamid is acceptable.

The acute dietary exposure is estimated by the National Estimated Short Term Intake (NESTI) calculation. The NESTI calculations are made in accordance with the deterministic method used by the JMPR with 97.5th percentile food consumption data derived primarily from the 2011–12 National Nutritional and Physical Activity Survey. NESTI calculations are conservative estimates of short-term exposure (24 hour period) to chemical residues in food.

An ARfD for florylpicoxamid was considered unnecessary by the APVMA based on the absence of significant toxicological effects in acute toxicity studies submitted.

Recommendations

The following amendments are required to be made to the APVMA MRL Standard (Table 6).

Table 6: Amendments to the APVMA MRL Standard

Amendments to Table 1		
Compound	**Food**	**MRL (mg/kg)**
Add:		
Florylpicoxamid		

[1] WHO (2008). Consultations and workshops: Dietary Exposure Assessment of Chemicals in Food: Report of a joint FAO/WHO Consultation, Annapolis, Maryland, USA, 2–6 May 2005.

Amendments to Table 1			
Compound		**Food**	**MRL (mg/kg)**
MO	0105	Edible offal (Mammalian)	0.02
PE	0112	Eggs	*0.01
MM	0095	Meat (mammalian) [in the fat]	0.02
ML	0106	Milks	*0.01
PM	0110	Poultry meat [in the fat]	*0.01
PO	0111	Poultry, edible offal of	*0.01
GC	0654	Wheat	0.02
CM	0654	Wheat bran, unprocessed	0.07

Amendments to Table 3	
Compound	**Residue**
Add:	
Florylpicoxamid	Commodities of plant origin: Sum of florylpicoxamid and (2S)-1,1-bis(4-fluorophenyl)propan-2-yl N-{[3-(hydroxy)-4-methoxypyridin-2-yl]carbonyl}-L-alaninate (X12485649), expressed as florylpicoxamid Commodities of animal origin: (2S)-1,1-bis(4-fluorophenyl)propan-2-yl N-{[3-(hydroxy)-4-methoxypyridin-2-yl]carbonyl}-L-alaninate (X12485649), expressed as florylpicoxamid

Amendments to Table 4			
Compound		**Animal feed commodity**	**MRL (mg/kg)**
Add:			
Florylpicoxamid			
		Wheat forage	5
AS	0654	Wheat straw and fodder, dry	2

Assessment of overseas trade aspects of residues in food

Commodities exported and main destinations

Wheat grain is considered to be a major export commodity2, as are commodities of animal origin, such as meat, offal, and dairy products, which may be derived from livestock fed feeds produced from treated wheat. Residues in these commodities resulting from the use of Telbek Adavelt active Fungicide may have the potential to unduly prejudice trade.

The major export destinations for Australian wheat in 2018–19 were the Philippines, Indonesia, Rep. of Korea, Japan, Vietnam, Malaysia, Iraq, New Zealand, Kuwait, Yemen, Thailand, Papua New Guinea, Fiji, United Arab Emirates and Egypt3. The significant export markets for Australian beef, sheep, pig meat and offals are listed in the APVMA Regulatory Guidelines – Data Guidelines: Agricultural – Overseas trade (Part 5B).

Overseas registrations and approved label instructions

Products containing florylpicoxamid are not currently registered overseas for agricultural uses.

Comparison of Australian MRLs with Codex and international MRLs

The Codex Alimentarius Commission (Codex) is responsible for establishing Codex Maximum Residue Limits (CXLs) for pesticides.4 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. Florylpicoxamid has not been considered by Codex and this is the first global submission so no relevant international MRLs have been established.

Potential risk to trade

Export of treated produce containing finite (measurable) residues of florylpicoxamid 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.

As residues above the combined LOQ of 0.02 mg/kg are not expected in wheat grain and no detectable residues were observed in 23 of the 27 trials conducted according to, or approximating, GAP the overall risk to trade in wheat grain is considered to be low.

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[2] APVMA Regulatory Guidelines – Data Guidelines: Agricultural - Overseas trade (Part 5B)

[3] Agricultural commodities and trade data - Department of Agriculture, accessed 8/10/2021

[4] Codex Alimentarius International Food Standards homepage: https://www.fao.org/fao-who-codexalimentarius/en/

The submitted dairy cattle transfer study indicates that detectable residues of the metabolite X12485649 (the component of the proposed residue definition for animal commodities) should not occur in animal commodities for export if a 4 day Export Slaughter Interval (ESI) is observed.

Work health and safety assessment

Telbek Adavelt active Fungicide is intended for professional application by boom spray in wheat at 300 to 400 mL/ha. Up to 2 applications are proposed per season with a 14 to 28 day interval between treatments.

Health hazards

Telbek Adavelt active Fungicide had low acute oral, dermal, and inhalation toxicity. The product was not irritating to the skin and was not a skin sensitiser but was severely irritating to the eye.

Florylpicoxamid had low acute oral, dermal, and inhalation toxicity. It was a slight eye irritant but not a skin irritant nor a skin sensitiser.

Occupational exposure

Exposure during use

Workers may be exposed to the product by dermal and inhalational routes during mixing, loading, application, although accidental ocular exposure may also occur. The product is intended for application by ground boom with a maximum rate of 400 mL/ha or 40 g a.c./ha.

Risks to workers from short-term exposure will be adequately mitigated by the first aid instructions and safety directions (FAISD) as shown on the product label.

Risks to workers from repeated exposure were estimated using default values from the US EPA Pesticide Handlers Exposure Database (PHED) surrogate exposure guide (2009) and the US EPA Pesticide Handler Exposure Calculator (2020) using a NOAEL of 14 mg/kg bw/day from a 2-year chronic oral toxicity study in rats. A margin of exposure (MOE) of 100 or above is considered acceptable. The MOE takes into account potential interspecies and intraspecies variation.

The MOEs for workers associated with repeated exposure to the product were determined to be well in excess of 100 for workers wearing a single layer of clothing with no additional personal protective equipment (PPE).

Exposure during re-entry or rehandling

Workers may be exposed to the product during re-entry activities. The MOEs calculated for re-entry indicated no PPE would be necessary according to the US EPA Occupational Pesticide Re-entry Exposure Calculator (OPREC) (2017). However, a precautionary re-entry statement is included on the product label to further minimise the risk of accidental hand to eye exposure.

Public exposure

The product is intended for professional use and is not expected to be used or applied by members of the public. The RAL for bystanders spray drift risk assessment is 27 kg /ha. No buffer zones are required for the protection of bystanders from spray drift associated with the application of the product. See the spray drift and label recommendations sections for the general spray drift restraints.

Recommendations

The following first aid instructions, safety directions and precautionary (warning) statements are recommended for the product label:

First aid instructions

If poisoning occurs, contact a doctor or Poisons Information Centre. Phone Australia 131126; New Zealand 0800 764 766. If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

Safety directions

Will damage the eyes. May irritate the nose and throat. Avoid contact with eyes. Avoid inhaling product and spray mist. When opening the container and preparing product for use, wear face shield or goggles. Wash hands after use. After each day’s use, wash face shield or goggles and contaminated clothing.

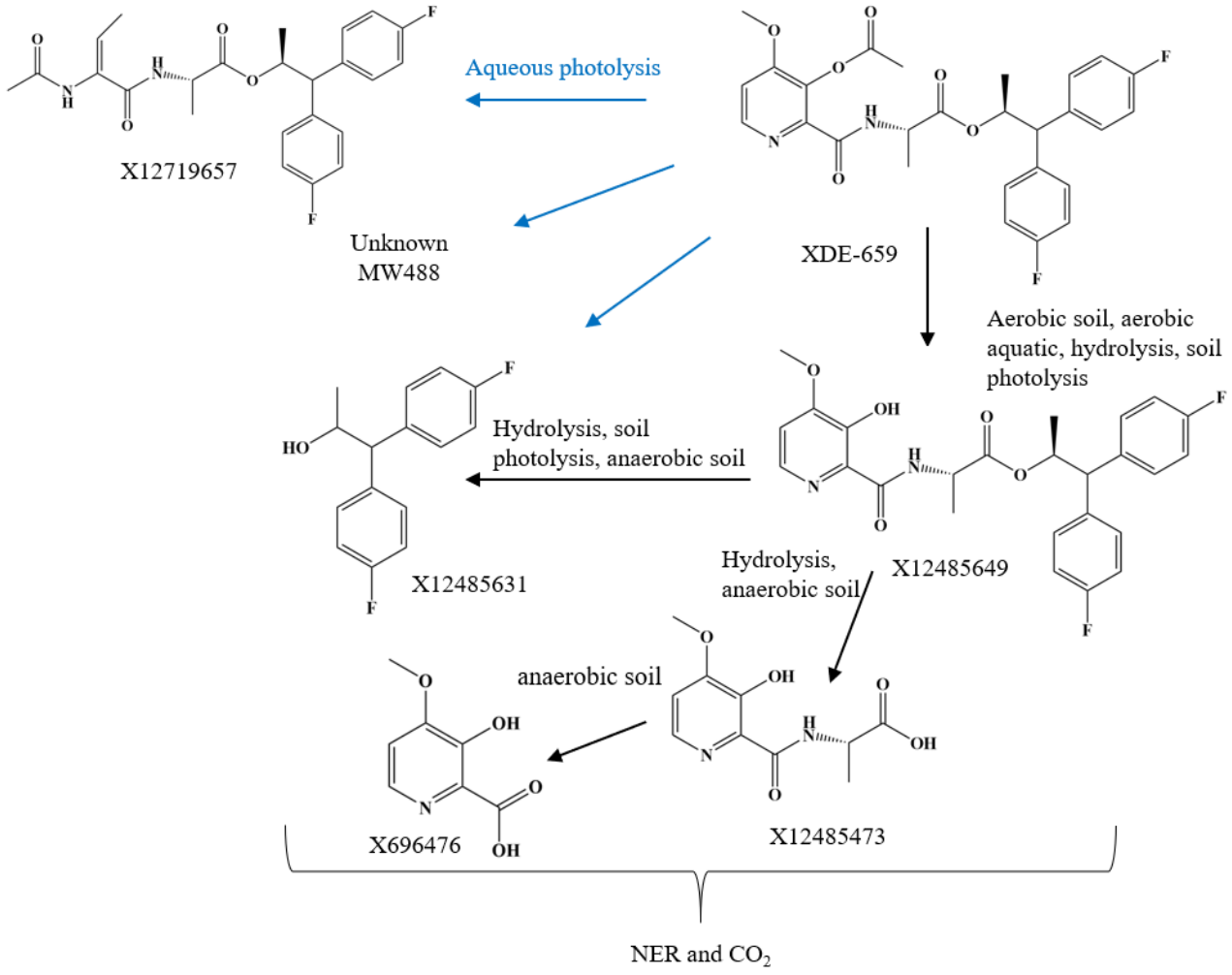
Re-entry statement

DO NOT allow entry into treated areas until spray has dried. If prior entry is necessary DO NOT touch or rub eyes, nose or mouth with hand.

Environmental assessment

Fate and behaviour in the environment

Figure 3: Proposed route of degradation in the environment



Soil

Florylpicoxamid degraded rapidly to X12485649 (max 92%) under moist conditions in both irradiated and dark controls, demonstrating that the degradation observed was caused by hydrolysis and not due to photolytic processes.

The degradation of florylpicoxamid was further evaluated in 4 laboratory soils under both aerobic and anaerobic conditions at 20°C in the dark. Florylpicoxamid was not stable in soil and converted rapidly to X1285649 (max 93%). Other major metabolites included X12485631 (max 33%), X12485473 (max 12%) and X696476 (max 12%). Dissipation of combined residues of florylpicoxamid and X1285649 followed simple first-order kinetics with half-lives ranging 138 to 1060 days under aerobic conditions (geomean DT50 406 days) and 99 to 287 days under anaerobic conditions (geomean DT50 185 days). Up to 18% mineralisation

was observed under aerobic conditions (max 0.3% mineralisation under anaerobic conditions), and bound residues reach 35% AR.

The dissipation of florylpicoxamid was further evaluated under field conditions at 4 European sites (exclusion of surface processes) with a single application to bare soil, and 4 USA sites with multiple (2 to 5) applications to bare soil. One USA site was also tested with multiple applications to a cropped plot. In all cases, florylpicoxamid soil residues dissipated very rapidly with modelling half-lives ranging 1.7 to 4.1 days (geomean DT50 2.5 days). Combined residues of florylpicoxamid and X12485649 were persistent with modelling half-lives ranging 10 to 1720 days (geomean DT50 265 days). Residues for both analytes were essentially retained in the top 10 to 15 cm soil layer.

The mobility of florylpicoxamid and X1285649 was tested in standard batch equilibrium studies in 8 soils. Florylpicoxamid was determined to be slightly mobile in soil with KF values ranging 13 to 43 mL/g (mean 22 mL/g, 1/n 0.89) and KFoc values ranging 607 to 3141 mL/g (mean 1299 mL/kg). X12485649 was determined to be non-mobile in soil with KF values ranging 23 to 142 mL/g (mean 79 mL/g, 1/n 0.82) and KFoc values ranging 1453 to 26372 mL/g (mean 6261 mL/kg). X1285649 did not demonstrate any relationship between soil sorption and organic carbon, and its sorption was concentration dependent.

Water and sediment

Florylpicoxamid hydrolysed to X12485649 at 25°C with DT50 values of 13 days (pH 4), 17 days (pH 7), and 0.33 days (pH 9). X12485649 was stable to hydrolysis at pH 4 and pH 7 but hydrolysed to X12485473 (max 55%) and X12485631 (max 54%) at pH 9 and 25°C. The DT50 value was 27 days.

Photodegradation of florylpicoxamid in sterile pH 7 buffer was rapid with a DT50 values of 0.12 days (under continuous irradiation) and 0.21 days (corrected for summer sunlight at 40° N latitude). The photodegradation of florylpicoxamid was unique in that X12485649 was not observed at appreciable levels (max 7.0% AR). The major photoproducts were X12485631 (max 48%), MW488 (18%), and X12719657 (max 11%). Significant efforts were made to definitively determine the structure of MW488 without success.

Florylpicoxamid hydrolysed to X12485649 (max 87%) then X12485631 (max 38%) in the aerobic mineralisation in surface water study. Dissipation of combined residues of florylpicoxamid and X12485649 followed simple first-order kinetics with DT50 values ranging 46 to 87 days (geomean 63 days). Mineralization accounted for a maximum of 14% applied radiation (AR) (pyridine label) and no other volatiles were formed.

When applied to aerobic and anaerobic water/sediment systems, florylpicoxamid quickly hydrolysed to X12485649 (max 45% in water phase) which partitioned rapidly to sediment (max 83% in sediment phase). Under aerobic conditions, dissipation of combined residues of florylpicoxamid and X12485649 in the water phase followed simple first-order kinetics with DT50 values ranging 14 to 70 days (geomean 31 days). Under both aerobic and anaerobic conditions, combined residues were persistent (DT50 172 to 186 days) in the total Calwich Abbey system (5.4% OC), and very persistent (stable) in the total Lake Needham system (0.12% OC).

Air

Standard modelling was undertaken to predict the atmospheric half-life of florylpicoxamid and its metabolites X12485649, X12485473, X12485631, and X12719657 through reaction with hydroxyl radicals. Based on a global annual average 24-hour concentration of 1.5×106 OH-radicals/cm3 reaction with hydroxyl radicals and a 12-hour day, atmospheric DT50 values were calculated to be <1 day for all molecules.

Effects and associated risks to non-target species

Given the toxicity similarities, and rapid degradation pathway from florylpicoxamid to X12485649, the risk assessment utilised the most sensitive toxicity endpoints from either florylpicoxamid or X12485649 (after adjusting the X12485649 endpoints to the 'florylpicoxamid equivalent' or 'feq' concentration).

Terrestrial vertebrates

Following gavage administration, florylpicoxamid had low toxicity to mammals (LD50 >2000 mg a.c./kg bw, Rattus norvegicus) and birds (LD50 >2000 mg a.c./kg bw, Anas platyrhynchos). However, following short-term dietary administration of a small passerine bird species, 30% mortality occurred at the highest tested concentration (LD50 >88 mg a.c./kg bw/d, Serinus canaria). Following long-term dietary administration in avian reproduction studies, there were no effects observed at the highest tested concentration (lowest NOEL 83 mg a.c./kg bw/d, Colinus virginianus). In a mammalian dietary developmental toxicity study in rabbits, increased abortions were observed at maternally toxic doses of 25 mg a.c./kg bw/d (NOAEL 10 mg/kg/d, Oryctolagus cuniculus).

The screening level assessment assumed that the indicator species feed exclusively on over-sprayed food items within the treatment area. Risks were determined to be acceptable at the screening level.

The log Kow of 4.3 for florylpicoxamid and 3.5 for X12485649 indicate a potential for bioaccumulation. A food chain assessment indicates that any accumulated residues in earthworms or fish will not reach levels harmful to predators under the proposed conditions of use. As the evaluation of the toxicokinetic studies in the toxicology section found no evidence of tissue accumulation, it can be assumed that there is no biomagnification along the food chain.

Aquatic species

Florylpicoxamid has high toxicity to freshwater species of fish (lowest LC50 0.011 mg a.c./L, *Oncorhynchus mykiss*), invertebrates (EC50 0.059 mg a.c./L, *Daphnia magna*), sediment dwellers (EC50 0.18 mg a.c./L, *Chironomus riparius*) and has moderate toxicity to freshwater algae (ErC50 4.5 mg a.c./L, *Pseudokirchneriella subcapitata*) and aquatic plants (ErC50 2.8 mg a.c./L, *Lemna gibba*). Even higher toxicity of florylpicoxamid was observed in marine species of fish (LC50 0.0076 mg a.c./L, *Cyprinodon variegatus*), invertebrates (LC50 0.010 mg a.c./L, *Americamysis bahia*), and algae (ErC50 0.40 mg a.c./L, *Skeletonema costatum*). Combined residues of florylpicoxamid and X12485649 in the sediment phase were not toxic to sediment dwelling species (LC50 >67 mg a.c./kg dry sediment, 3 species tested). Based on the high toxicity to most aquatic species, a protection statement is required on the label to identify the hazard.

Following long-term exposure to florylpicoxamid in flow-through tests, increased mortality of fish fry was observed at concentrations as low as 0.0072 mg a.c./L in freshwater species (NOEC 0.0034 mg a.c./L, *Pimephales promelas*) and 0.0017 mg a.c./L in marine species (NOEC 0.00080 mg a.c./L, *Cyprinodon variegatus*). Reduced reproduction of aquatic invertebrates was observed at concentrations as low as 0.014 mg a.c./L in freshwater species (NOEC 0.0072 mg a.c./L, *Daphnia magna*) and 0.0015 mg a.c./L in marine species (NOEC 0.00080 mg a.c./L, *Americamysis bahia*). Decreased survival of sediment dwelling species was observed at concentrations as low as 0.080 mg a.c./L (NOEC 0.039 mg a.c./L, *Chironomus riparius*) and 4.8 mg a.c./kg dry sediment (NOEC 2.4 mg a.c./kg dry sediment, *Lumbriculus variegatus*).

Relative to the parent substance, the major metabolite X12485649 had higher toxicity to aquatic invertebrates (lowest LC50 0.0040 mg/L, *Americamysis bahia*). Following long-term exposure to X12485649 in a flow-through test, reduced reproduction was observed at concentrations as low as 0.0016 mg/L (NOEC 0.00072 mg a.c./L, *Americamysis bahia*). Other major metabolites X12485631, X12485473 and X12719657 were less toxic than the parent substance.

The regulatory acceptable level (RAL) for natural aquatic areas was determined to be 0.43 µg feq/L based on the acute toxicity of X12485649 to aquatic invertebrates. Spray drift risks to aquatic species were determined to be acceptable provided buffer zones of 20 to 60 metres are observed for ground application (depending on the boom height). Runoff risks to aquatic species were also determined to be acceptable provided a runoff event is not expected soon after application (i.e., due to storms or irrigation). General runoff restraints are advised to mitigate this risk.

Bees and other non-target arthropods

Florylpicoxamid and its metabolites X12485649, X12563767, X12641685, X1217067 have low toxicity to adult bees by contact exposure (LD_{50} >100 µg a.c./bee, *Apis mellifera*) and oral exposure (LD_{50} >108 µg a.c./bee, *Apis mellifera*). Florylpicoxamid has moderate toxicity to bee larvae (LD_{50} 33 µg a.c./bee). The EC formulation did not enhance toxicity to bees (contact and oral LD_{50} >20 µg a.c./bee, *Apis mellifera*).

Following long-term dietary exposure to florylpicoxamid, there were no effects on adult bees at the highest test concentration (NOEDD 13 µg a.c./bee, *Apis mellifera*), while increased pupal mortality and decreased emergence of bee larvae was observed at doses as low as 16 µg a.c./larva/day (NOED 5.3 µg a.c./larva/day).

In Tier 1 (glass plate) toxicity tests with a representative EC formulation of florylpicoxamid, fresh dried residues were toxic to the indicator species of predatory arthropods (LR_{50} 55 g a.c./ha, *Typhlodromus pyri*) and parasitic arthropods (LR_{50} 5.0 g a.c./ha, *Aphidius rhopalosiphi*). In Tier 2 extended laboratory tests on natural (foliar) substrates, fresh-dried residues were less toxic to both the predatory mite (LR_{50} 213 g a.c./ha, ER_{50} 61 g a.c./ha, *T.pyri*) and the parasitic wasp (LR_{50} 297 g a.c./ha, ER_{50} >300 g a.c./ha, *A.rhopalosiphi*). Additional extended laboratory studies were provided for the ladybird beetle (LR_{50} 161 g a.c./ha, ER_{50} >188 g a.c./ha, *Coccinella septempunctata*) and green lacewing (LR_{50} 467 g a.c./ha, ER_{50} >375 g a.c./ha, *Chrysoperla carnea*). The most sensitive regulatory acceptable endpoint for non-target arthropods was the ER_{50} 61 g a.c./ha for *Typhlodromus pyri*. Based on a maximum application rate of 40 g a.c./ha and a minimum 14-day treatment interval, the risks to non-target arthropods were determined to be acceptable.

Risks of florylpicoxamid residues to bees and other non-target arthropods were determined to be acceptable assuming direct dietary and/or contact exposure within the treatment area at the maximum exposure rate. No protection statements are required for bees and the product is considered to be compatible with integrated pest management (IPM) strategies utilising beneficial arthropods.

Soil organisms

Florylpicoxamid had low toxicity to soil macro-organisms such as earthworms at the limit concentration tested (LC_{50corr} >3.3 mg a.c./kg dry soil, *Eisenia andrei*). The EC formulation did not enhance toxicity (LC_{50corr} >60 mg a.c./kg dry soil, *Eisenia andrei*).

Following long-term exposure to a representative EC formulation of florylpicoxamid, reproduction was inhibited in a dose-dependent manner in 3 species of soil macro-organisms (lowest EC_{10} 10 mg a.c./kg dry soil, *Folsomia candida*). The major soil metabolites X12485649 (max 93%) and X12485631 (max 33%) were approximately equivalent in long-term toxicity relative to the parent substance.

No adverse effects of florylpicoxamid or its metabolites X12485649 and X12485631 were observed on soil processes such as nitrogen and carbon mineralisation at exaggerated soil concentrations (lowest NOEC 1.4 mg a.c./kg dry soil). The EC formulation did not influence soil processes (NOEC 2.0 mg a.c./kg dry soil).

Risks of florylpicoxamid residues to soil organisms were determined to be acceptable assuming the worst-case scenario of a direct overspray of soil without interception. No protection statements are therefore required for soil organisms.

Non-target terrestrial plants

A representative EC formulation of florylpicoxamid had no effect on a standard suite of 10 test plants following pre-emergent exposure (seedling emergence test) at the highest rate tested (ER_{25} >300 g a.c./ha, ER_{50} >300 g a.c./ha).

Following post-emergent exposure (vegetative vigour test), the most sensitive endpoints were phytotoxicity and dry weight. While phytotoxicity is more subjective than quantitatively determined endpoints such as fresh or dry weight, it is still an important endpoint as bleaching of off-target native plants and neighbouring plots is undesirable. The most sensitive species was tomato (ER_{25} 134 g a.c./ha, ER_{50} 240 g a.c./ha, *Solanum lycopersicum*).

The regulatory acceptable level (RAL) for non-target vegetation areas was determined to be 24 g a.c./ha based on visual injury in tomato. Spray drift risks were determined to be acceptable without buffer zones for ground application.

Recommendations

In considering the environmental safety of the proposed use of Telbek Adavelt active Fungicide, the APVMA had regard to the toxicity of the active constituent and its residues, including degradation products, in relation to relevant organisms and ecosystems. Based on the outcome of the risk assessment, the APVMA can be

satisfied that the proposed use of the product meets the environmental safety criteria when used according to the label directions.

Efficacy and safety assessment

Efficacy and crop safety was assessed in 14 field trials in New South Wales, South Australia, Tasmania, Victoria, and New Zealand from 2017–19.

Proposed product use pattern

Telbek Adavelt active Fungicide is proposed for control of Septoria tritici blotch (*Zymoseptoria tritici*) in wheat at 300 to 400 mL/ha.

Efficacy and target crop safety

Efficacy

11 trials were conducted to evaluate the efficacy of the proposed product at 300 to 400 mL/ha against Septoria tritici blotch in wheat; both with and without the addition of an adjuvant. The trials included one to 3 applications of 300 to 600 mL/ha to wheat crops from stem elongation to booting growth stages in accordance with the timing proposed on the product label (a maximum of 2 applications may be made per crop. DO NOT apply after Z69 (end of flowering)).

9 of the 11 trials demonstrated statistically significant reductions in Septoria tritici blotch compared to the untreated controls, with reductions equivalent to the reductions observed in wheat treated with registered industry standards.

An additional, small-scale pot trial was conducted in the USA which successfully demonstrated rainfastness of the product when intense (simulated) rain was applied 1 hour after application of the product. The pots subject to intense rainfall simulation reported equivalent reductions in Septoria tritici blotch when compared to wheat treated with the product not subject to the simulated rainfall event.

Crop safety

No adverse observations of Telbek Adavelt active Fungicide applied to wheat were reported in the 11 efficacy trials at rates up to 600 mL/ha. In 3 dedicated crop safety trials, Telbek Adavelt active Fungicide at 800 mL/ha (2X label rate) was applied to multiple varieties of wheat with no adverse effects on phytotoxicity, plant protein percentages, grain moisture percentages, or crop yield.

Resistance management

Florylpicoxamid is proposed to be a member of the quinone inside inhibitor (QiI) disruptor mode of action group (Group 21) of fungicides as designated by the Fungicide Resistance Action Committee (FRAC). The product label proposes the following resistance management statement:

For fungicide resistance management Telbek Adavelt active Fungicide is a Group 21 fungicide. Some naturally occurring individual fungi resistant to the product and other Group 21 fungicides may exist through normal genetic variability in any fungal population. The resistant individuals can eventually dominate the

fungal population if these fungicides are used repeatedly. These resistant fungi will not be controlled by the product or other Group 21 fungicides, thus resulting in a reduction in efficacy and possible yield loss. Since the occurrence of resistant fungi is difficult to detect prior to use, Corteva AgroSciences Australia Pty Ltd accepts no liability for any losses that may result from the failure of this product to control resistant fungi.

Telbek may be subject to specific industry resistance management strategies which may recommend limits to the number of sprays, constraints regarding consecutive sprays or sprays following in-furrow or seed treatments, minimum spray intervals and no-spray periods for specific fungicide activity groups. For further information refer to the CropLife Australia website.

Recommendations

Trial data indicate that Telbek Adavelt active Fungicide will provide acceptable control against Septoria tritici blotch in wheat when used as a preventative treatment. Acceptable crop safety is expected when the product is used as directed. The directions for use are appropriate and consistent with fungicide use in commercial agriculture in Australia. There are no objections on efficacy or target crop safety grounds to the registration of the product Telbek Adavelt active Fungicide containing 100 g/L florylpicoxamid.

Spray drift assessment

Regulatory Acceptable Levels (RALs) were established for each risk area in order to calculate the appropriate spray drift buffer zones for Telbek Adavelt active Fungicide, using in the APVMA Spray Drift Assessment Tool (SDRAT).

Residues

The submitted dairy cow transfer study feeding at 6.20 ppm gave highest residues (X12485649) of 0.027 mg/kg in perirenal fat. For residues in perirenal fat to be at the LOQ (0.01 mg/kg), the maximum feeding level is 2.30 ppm.

The regulatory acceptable level RAL for livestock areas is 2.30 ppm. No mandatory buffer zones are required for livestock areas when Telbek Adavelt active Fungicide is applied by ground boom sprayers.

Human health

Risks to bystanders from spraying activities were based on potential risks to children (as the most sensitive sub-population) using an adjusted NOAEL of 14 mg/kg bw/day, a maximum application rate of product of 400 mL/ha with a minimum droplet size of MEDIUM. Using these parameters, a RAL of 27 kg/ha was established for calculating bystanders buffer zones in the SDRAT. Based on these calculations, no mandatory buffer zone is required for bystanders when Telbek Adavelt active Fungicide is applied by ground boom.

Environment

Florylpicoxamid and its metabolites have low toxicity to adult bees by contact exposure (LD50 >100 µg a.c./bee, *Apis mellifera*) and oral exposure (LD50 >108 µg a.c./bee, *Apis mellifera*). Spray drift to bees are therefore considered to be acceptable and no mandatory buffer zones for pollinators are required.

Spray drift risks to aquatic species are driven by the acute toxicity of the major metabolite, X12485649 to aquatic invertebrates with a RAL of 0.43 µg/L. Mandatory buffer zones for natural aquatic areas were determined to be 20 to 60 metres for boom sprayers depending on the boom height.

Florylpicoxamid caused bleaching and growth inhibition in some species of non-target terrestrial plants following post-emergent exposure. The RAL for non-target vegetation areas was determined to be 24 g a.c./ha based on visual injury in tomato. Mandatory buffer zones for natural vegetation areas were determined not to be required for ground application.

Table 7: Summary of RALs for Telbek Adavelt active Fungicide (100 g/L florylpicoxamid)

Sensitive area	Regulatory Acceptable Level Level of active	Units
Natural aquatic	0.43	µg/L
Vegetation	24	g/ha
Pollinator	999999	g/ha
Bystander	27000	g/ha
Livestock	2.30	ppm

Buffer zones calculated by the SDRAT, using the above RALs, were incorporated into the Telbek Adavelt active Fungicide label spray drift instructions (see below).

Labelling requirements

POISON

KEEP OUT OF REACH OF CHILDREN
READ SAFETY DIRECTIONS BEFORE OPENING OR USING

Telbek®

Adavelt® active

FUNGICIDE

ACTIVE CONSTITUENT: **100 g/L FLORYLPICOXAMID**
SOLVENT: **381 g/L N,N-DIMETHYLDECANAMIDE**

GROUP	21	FUNGICIDE

For the control of Septoria tritici blotch in wheat as specified in the Directions for Use.

Net Contents: 1 – 110L

Corteva Agriscience Australia Pty Ltd
A.B.N. 24 003 771 659
Level 9, 67 Albert Ave Chatswood NSW 2067
www.corteva.com.au

CORTEVA™ agriscience

RESTRAINTS
DO NOT make more than 2 applications per crop.
DO NOT apply after Z69 (end of flowering).
DO NOT apply if heavy rains or storms are forecast within 3 days.
DO NOT irrigate to the point of field runoff for at least 3 days after application.

SPRAY DRIFT RESTRAINTS
Specific definitions for terms used in this section of the label can be found at apvma.gov.au/spraydrift.
DO NOT allow bystanders to come into contact with the spray cloud.
DO NOT apply in a manner that may cause an unacceptable impact to native vegetation, agricultural crops, landscaped gardens and aquaculture production, or cause contamination of plant or livestock commodities, outside the application site from spray drift. The buffer zones in the relevant buffer zone tables below provide guidance but may not be sufficient in all situations. Wherever possible, correctly use application equipment designed to reduce spray drift and apply when the wind direction is away from these sensitive areas.
DO NOT apply unless the wind speed is between 3 and 20 kilometres per hour at the application site during the time of application.
DO NOT apply if there are surface temperature inversion conditions present at the application site during the time of application. These conditions exist most evenings one to 2 hours before sunset and persist until one to 2 hours after sunrise.
Boom sprayers
DO NOT apply by a boom sprayer unless the following requirements are met:
Spray droplets are not smaller than a MEDIUM spray droplet size category.
Minimum distances between the application site and downwind sensitive areas (see 'Mandatory buffer zones' section of the following table titled 'Buffer zones for boom sprayers') are observed.

Buffer zones for boom sprayers

Application rate	**Boom height above the target canopy**	**Mandatory downwind buffer zones**				
		Bystander areas	**Natural aquatic areas**	**Pollinator areas**	**Vegetation areas**	**Livestock areas**
Up to maximum label rate (400 mL/ha)	0.5 m or lower	0 metres	20 metres	0 metres	0 metres	0 metres
	1.0 m or lower	0 metres	60 metres	0 metres	0 metres	0 metres

DIRECTIONS FOR USE

CROP	DISEASE	RATE	CRITICAL COMMENTS
Wheat	Septoria tritici blotch (*Zymoseptoria tritici*)	300 – 400 mL/ha	Use as a **protectant** spray only. Monitor crops from late tillering and spray before disease has infected any of the top 3 leaves of the crop. Aim to protect the 3 top leaves of the plant from disease. A maximum of 2 applications may be made per crop. DO NOT apply after Z69 (end of flowering) Recheck crops after application, as retreatment 14 -28 days later may be needed where conditions favour disease development and initial treatment was applied prior to flag leaf stage. **Adjuvant –** always apply with Uptake Spraying Oil at 500mL/100L.

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

WITHHOLDING PERIODS:
Wheat:
HARVEST: **NOT REQUIRED WHEN USED AS DIRECTED**
GRAZING: **DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 14 DAYS AFTER APPLICATION**

TRADE ADVICE:
LIVESTOCK DESTINED FOR EXPORT MARKETS: The grazing withholding period only applies to stock slaughtered for the domestic market. Some export markets apply different standards. To meet these standards, an Export Slaughter Interval needs to be observed before stock are sold or slaughtered.
LIVESTOCK THAT HAS GRAZED ON OR BEEN FED TREATED CROPS SHOULD BE PLACED ON CLEAN FEED FOR 4 DAYS PRIOR TO EXPORT SLAUGHTER.

Telbek® Adavelt® active Fungicide may leave detectable chemical residues in hay. Overseas markets may not have appropriate residue tolerances in place or may have established tolerances which are lower than Australian maximum residue limits. Hay exported to these destinations may require a longer harvesting withholding period. If you are using this product on crops destined for export, please contact your exporter for advice.

GENERAL INSTRUCTIONS

Disease control in wheat
Monitor the crop regularly for symptoms of disease. Generally, spray at the first sign of disease, although this will depend on factors such as expected weather conditions and the particular crop variety disease resistance. Aim to control foliar disease on the top 3 leaves in wheat particularly the flag leaf and the first leaf below the flag leaf. To protect these leaves will generally require at least 2 fungicide applications in crops where conditions favour continued disease development and may require applications earlier in the crop life

to control disease commencing lower in the crop canopy. Where wheat is planted into last year's stubble, for some diseases, more than 2 applications of a fungicide may be required commencing early in the crop's growth. Where 2 or more treatments are needed to manage disease, use fungicides with another mode of action for the other applications. Ensure good coverage of all susceptible plant parts.

MIXING

Telbek® is an emulsifiable concentrate (EC) formulation.

Agitate or shake the container immediately prior to use. Half-fill the spray tank with water, add the appropriate amount of accurately measured Telbek®, then complete filling the tank. Ensure thorough agitation by mechanical or hydraulic action at all times during mixing and application. Only use clean water within the range pH 5-9 to dilute Telbek®.

COMPATIBILITY

If intending to tank mix Telbek® with other agricultural chemicals or plant nutrients consult Corteva Agriscience. Telbek® is physically or biologically compatible with the following products:

Biological compatibility	**Physical compatibility**		
Fungicide	**Herbicide**	**Insecticides**	**Foliar nutrients**
Epoxiconazole	Paradigm	Transform WDG	Activist Max
Prosaro	Pixxaro	Chlorpyrifos	Activist Red
Prothioconazole	2,4-D Amine	Alpha cypermethrin	Maxi Mang
Radial	LVE MCPA		
	Bromicide MA		
Adjuvants	Cadence		
Uptake spraying oil			

Biological compatibility – Telbek® is biologically compatible with fungicides and Uptake Spraying Oil listed above.

Physical compatibility – Telbek® is physically compatible with herbicides, insecticides and foliar nutrients listed above.

Crop safety and disease control have not been determined for all combinations and rates. Consult Corteva agriscience or your local reseller for further information.

STORAGE OF DILUTED SPRAY MIX

Whenever possible the spray mix should be used immediately after it is prepared. However, if weather conditions or mechanical breakdown prevent immediate use, the spray mix may be stored for up to 24 hours without loss of activity. The spray mix should be agitated thoroughly by mechanical or hydraulic action at regular intervals during storage to prevent sedimentation. Ensure that the stored spray mix is thoroughly agitated at least once every 8 hours. The spray mix must be stored out of direct sunlight.

APPLICATION

Thorough coverage of the crop is essential. Do not apply when conditions are unsuitable for water-based spray applications. Avoid high temperature, strong winds, inversion conditions, imminent rain or any conditions that may reduce the quality of spray coverage or result in drift from the target area. Techniques to minimise drift should be employed at all times when applying sprays to, or near, sensitive areas.

Ground application

Apply product using a total spray volume of at least 60 L/ha and preferably 80L/ha or more where canopies are big and growth stage is advanced. Use a MEDIUM spray quality.

RAINFASTNESS

Rain can wash Telbek® from treated plant surfaces and result in reduced disease control. Avoid making spray applications if rain is expected before the spray can dry completely. Telbek® is rainfast after 1 hour of drying time. Where Telbek® is applied in tankmix, use the longer of the partner products rainfast time/s to determine when to apply to avoid rain.

CLEANING SPRAY EQUIPMENT
After using Telbek® empty the tank and completely drain the system. Rinse the tank, pumps, lines, hoses, filters and nozzles by circulating clean water through the system. Drain and repeat the rinsing procedure twice.

FUNGICIDE RESISTANCE WARNING

GROUP	21	FUNGICIDE

For fungicide resistance management Telbek® Adavelt® active Fungicide is a group 21 fungicide. Some naturally occurring individual fungi resistant to the product and other group 21 fungicides may exist through normal genetic variability in any fungal population. The resistant individuals can eventually dominate the fungal population if these fungicides are used repeatedly. These resistant fungi will not be controlled by the product or other Group 21 fungicides, thus resulting in a reduction in efficacy and possible yield loss. Since the occurrence of resistant fungi is difficult to detect prior to use, Corteva Agriscience Australia Pty Ltd accepts no liability for any losses that may result from the failure of this product to control resistant fungi.

Telbek® may be subject to specific industry resistance management strategies which may recommend limits to the number of sprays, constraints regarding consecutive sprays or sprays following in-furrow or seed treatments, minimum spray intervals and no-spray periods for specific fungicide activity groups. For further information refer to the CropLife Australia website.

RE-ENTRY
Do not allow entry into treated areas until the spray has dried. If prior entry is necessary DO NOT touch or rub eyes, nose or mouth with hand.

PROTECTION OF WILDLIFE, FISH, CRUSTACEANS AND ENVIRONMENT
Very toxic to aquatic life. DO NOT contaminate streams, rivers or watercourses with the chemical or used containers.

STORAGE AND DISPOSAL
Store in the closed, original container in a cool well-ventilated area. Do not store for prolonged periods in direct sunlight.

Triple-rinse containers before disposal. Add rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site.

This container can be recycled if it is clean, dry, free of visible residues and has the *drumMUSTER* logo visible. Triple-rinse containers for disposal. Dispose of rinsate by adding it to the spray tank. Do not dispose of undiluted chemical on site. Wash outside of the container and the cap. Store cleaned container in a sheltered place with cap removed. It will then be acceptable for recycling at any *drumMUSTER* collection or similar container management site. The cap should not be replaced but may be taken separately.

If not recycling, break, crush or puncture and deliver empty packaging for appropriate disposal to an approved waste management facility. If an approved waste management facility is not available, bury the empty packaging 500 mm below the surface in a disposal pit specifically marked and set up for this purpose, clear of waterways, desirable vegetation and tree roots, in compliance with relevant local, state or territory government regulations. Do not burn empty containers or product.

SMALL SPILL MANAGEMENT
Do not touch or walk through spilled material. Wear a face shield or goggles, overalls buttoned to neck and wrist, chemical resistant gloves and footwear. Stop leak when safe to do so. Dam area and prevent entry into waterways, and drains.
Small spills/leaks: Contain and absorb small spills with a proprietary absorbent suitable for chemical spills or inert materials such as sand, soil or sawdust. Collect spilled product and place in sealable container for disposal. Spill residues may be cleaned using water and detergent. Contain and absorb wash water for disposal. Absorb and collect washings and place in the same sealable container for disposal. Dam the area of large spills and report them to Corteva Agriscience Emergency Services at 1800 370 754.

SAFETY DIRECTIONS
Will damage the eyes. May irritate the nose and throat.
Avoid contact with eyes. Avoid inhaling product and spray mist.
When opening the container and preparing product for use wear a face shield or goggles.
Wash hands after use. After each day's use, wash face shield or goggles and contaminated clothing.

FIRST AID
If poisoning occurs, contact a doctor or Poisons Information Centre. Phone: Australia 13 11 26, If in eyes, hold eyes open, flood with water for at least 15 minutes and see a doctor.

SAFETY DATA SHEET
Additional information is listed in the Material Safety Data Sheet for **TELBEK® ADAVELT® ACTIVE FUNGICIDE**, which is available from Corteva Agriscience on request. Call Customer Service Toll Free on 1-800 700 096 or visit www.corteva.com.au

Acronyms and abbreviations

Shortened term	Full term
ACCS/ACMS	Advisory Committee for Chemicals Scheduling/Advisory Committee for Medicines Scheduling
a.c.	active constituent
ADI	Acceptable Daily Intake (for humans)
AHMAC	Australian Health Ministers Advisory Council
a.i.	active ingredient
Anti-SRBC-ELISA test	Anti-Sheep Red Blood Cell Enzyme-Linked Immunosorbent Assay test
AR	Applied radioactivity
ARfD	Acute Reference Dose
BBA	Biologische Bundesanalstalt fur Land–und forstwirschaft
Bond Elut SAX SPE	Bond Elut strong anion-exchange Separated Phase Extraction
b.w.	Bodyweight
CXL	Codex Maximum Residue Limit
d	Day
DALA	Days After Last Application
DAT	Days After Treatment
DoC	Declaration of Composition
DT50	Time taken for 50% of the concentration to dissipate
EA	Environment Australia
EbC50	concentration at which the biomass of 50% of the test population is impacted
EC50	concentration at which 50% of the test population are immobilised
EEC	Estimated Environmental Concentration
ErC50	concentration at which the rate of growth of 50% of the test population is impacted
EI	Export Interval
EGI	Export Grazing Interval
ESI	Export Slaughter Interval

Shortened term	Full term
EUP	End Use Product
F0	original parent generation
g	Gram
GAP	Good Agricultural Practice
GCP	Good Clinical Practice
GLP	Good Laboratory Practice
GVP	Good Veterinary Practice
h	Hour
ha	Hectare
Hct	Heamatocrit
Hb	Haemoglobin
HPLC	High Pressure Liquid Chromatography or High Performance Liquid Chromatography
id	Intradermal
im	Intramuscular
ip	Intraperitoneal
IPM	Integrated Pest Management
iv	Intravenous
in vitro	outside the living body and in an artificial environment
in vivo	inside the living body of a plant or animal
kg	Kilogram
KOC	Organic carbon partitioning coefficient
L	Litre
LC50	concentration that kills 50% of the test population of organisms
LD50	dosage of chemical that kills 50% of the test population of organisms
LOAEL	Lowest Observed Adverse Effect Level
LOD	Limit of Detection – level at which residues can be detected
Log KOW	Log to base 10 of octanol water partitioning co-efficient, synonym POW

Shortened term	Full term
LOQ	Limit of Quantitation – level at which residues can be quantified
mg	Milligram
mL	Millilitre
MRL	Maximum Residue Limit
MSDS	Material Safety Data Sheet
NEDI	National Estimated Daily Intake
NESTI	National Estimated Short Term Intake
ng	Nanogram
NHMRC	National Health and Medical Research Council
NOEC/NOEL	No Observable Effect Concentration Level
NOAEL	No Observed Adverse Effect Level
Oasis HLB reversed phase SPE	Oasis Hydrophilic-Lipophilic-balanced reversed phase Separated Phase Extraction
OC	Organic Carbon
OM	Organic Matter
po	Oral
ppb	parts per billion
PPE	Personal Protective Equipment
ppm	parts per million
Q-value	Quotient-value
RAL	Regulatory acceptable level
RBC	Red Blood Cell Count
REI	Re-Entry Interval
s	Second
sc	Subcutaneous
SC	Suspension Concentrate
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons

Shortened term	Full term
TGA	Therapeutic Goods Administration
TGAC	Technical grade active constituent
µg	Microgram
vmd	volume median diameter
WG	Water Dispersible Granule
WHP	Withholding Period

Glossary

Term	Description
Active constituent	The substance that is primarily responsible for the effect produced by a chemical product
Acute	Having rapid onset and of short duration
Carcinogenicity	The ability to cause cancer
Chronic	Of long duration
Codex MRL	Internationally published standard maximum residue limit
Desorption	Removal of a material from or through a surface
Efficacy	Production of the desired effect
Formulation	A combination of both active and inactive constituents to form the end use product
Genotoxicity	The ability to damage genetic material
Hydrophobic	Repels water
Leaching	Removal of a compound by use of a solvent
Metabolism	The chemical processes that maintain living organisms
Photodegradation	Breakdown of chemicals due to the action of light
Photolysis	Breakdown of chemicals due to the action of light
Subcutaneous	Under the skin
Toxicokinetics	The study of the movement of toxins through the body
Toxicology	The study of the nature and effects of poisons

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