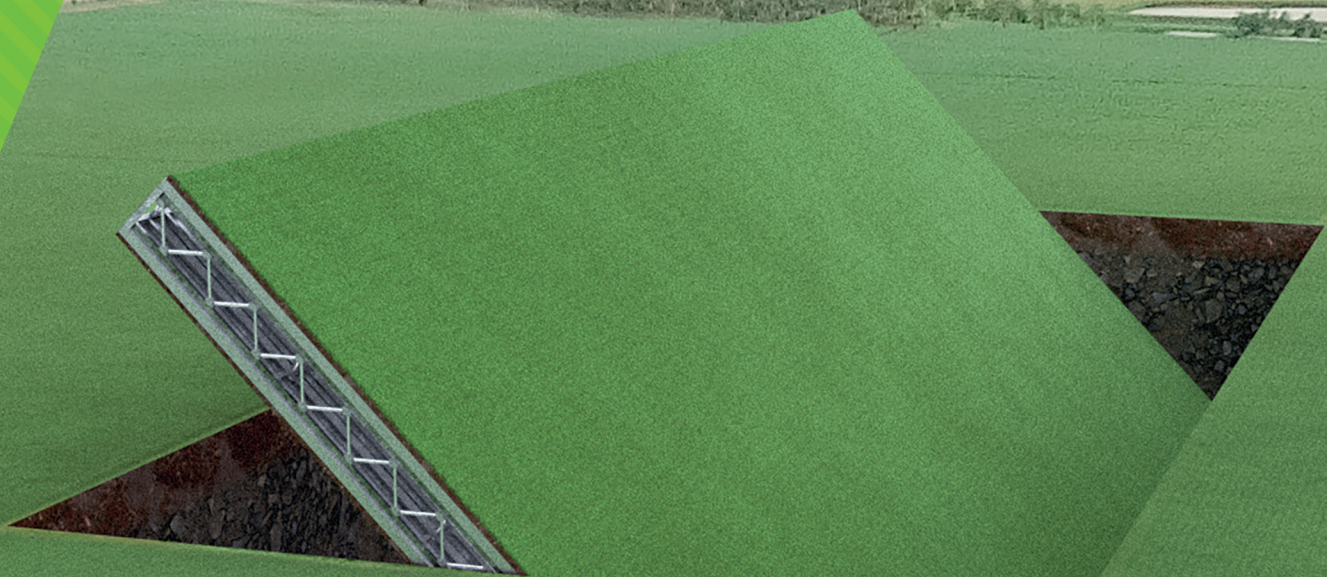




ADAMA



Grindstone[®]

Tough on weeds,
with rotation flexibility.

The ideal tank-mix partner for the control of hard-to-kill broadleaf and woody weeds without impacting re-cropping options.

Product Guide



HERBICIDE

[ADAMA.COM](https://www.adama.com)



Introduction

Grindstone® herbicide is the ideal tank-mix partner for the control of hard-to-kill broadleaf and woody weeds without impacting re-cropping options in the Northern cropping zone.

Key points

- Solo formulation of 240 g/L aminopyralid (Group 4) promotes flexible usage and keeps re-cropping options open
- Registered for use in all major cereal crops, including wheat, barley, oats and triticale, in addition to fallow, grass pasture, forestry and non-crop situations
- Controls more than 30 broadleaf and woody weeds when applied with registered tank-mix partners
- Soluble Liquid (SL) formulation – excellent compatibility with a range of grass and broadleaf weed herbicides
- Low use rates – convenience, minimal packaging, handling and transport.

Broad spectrum

Grindstone® herbicide, when used in combination with registered tank-mix partners such as Flagship™ 400, metsulfuron-methyl 600 WG, LVE MCPA 570, Picoflex®, MCPA 750, Fightback® and Wipe-Out Pro® (as listed in Table 1) can effectively control over 30 broadleaf weeds in winter cereals and fallow.

Excellent compatibility

Grindstone® herbicide has excellent compatibility with a broad range of grass and broadleaf weed herbicides. Download the latest compatibility guide at adama.com. Always follow best practice tank-mixing procedures.

Use of surfactant/wetting agent

Grindstone® herbicide does not require an adjuvant for enhanced performance and has been shown to be safe when used with either non-ionic surfactants or oil-based adjuvants. The choice of adjuvant used should be based on the recommended adjuvant of tank-mix partners being applied. Refer to the product label of the relevant tank-mix partner for specific adjuvant recommendations.

Water quality

The performance of Grindstone® herbicide is not impacted by alkaline or hard water. However, check tank-mix partner sensitivities and address as appropriate.



Table 1: Weeds targeted by Grindstone® herbicide

Weed	Grindstone® + Flagship™ 400	Grindstone® + Flagship™ 400 + metsulfuron methyl 600 WG	Grindstone® + Flagship™ 400 + LVE MCPA 570	Grindstone® + metsulfuron methyl 600 WG	Grindstone® + metsulfuron methyl 600 WG + LVE MCPA 570	Grindstone® + metsulfuron methyl 600 WG + Picoflex® + MCPA 750	Grindstone® + metsulfuron methyl 600 WG + Wipe-Out® Pro	Grindstone® + Flagship™ 400 + Wipe-Out® Pro	Grindstone® + Fightback® + Wipe-Out® Pro
African turnip weed									
Blackberry nightshade									(S)
Boggabri weed									
Camel melon									
Chicory									
Climbing buckwheat									
Clover (Subterranean)									
Common sowthistle									
Cowvine									
Cucumber melon									
Deadnettle									
Dock									
Flax-leaf fleabane									
Indian hedge mustard									
Lucerne									
Medic									
New Zealand spinach									
Parthenium weed									
Polymeria pusilla									
Prickly lettuce									
Prickly paddy melon									
Red pigweed									
Saffron thistle									
Saltbush									
Slender celery									
Spiny emex									
Stagger weed									
Turnip weed									
Variiegated thistle									
Vetch									
Volunteer chickpea									
Volunteer faba bean									
Volunteer field pea									
Volunteer lupin									
Volunteer sunflower									
Wild oats									
Wild radish									
Wild turnip									
Wireweed/Hogweed									

S: Suppression

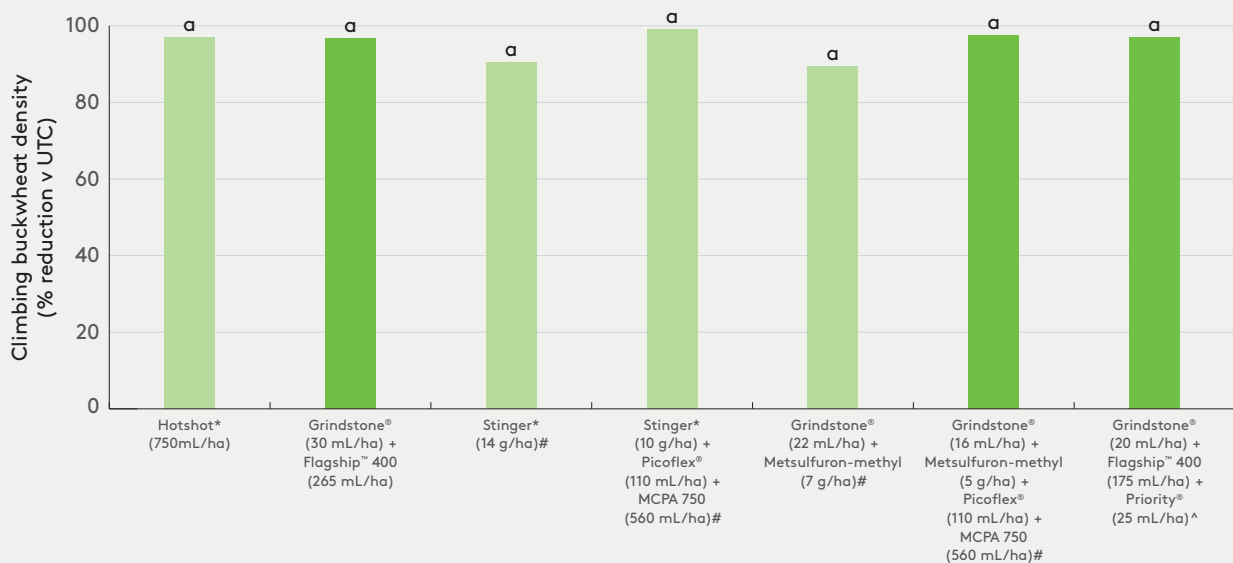
Efficacy data

Trials conducted throughout Australia have confirmed the efficacy and versatility of Grindstone® herbicide against a wide range of broadleaf and woody weeds when applied with various tank-mix partners.

Grindstone® herbicide provides equivalent efficacy against climbing buckwheat and common sowthistle as Hotshot* or Stinger* when applied as a tank-mix with Flagship™ or metsulfuron-methyl (Figures 1 and 2).

Grindstone® herbicide provides equivalent efficacy against wireweed as Hotshot* plus metsulfuron-methyl when applied as a tank-mix with Flagship™ and metsulfuron-methyl (Figure 3).

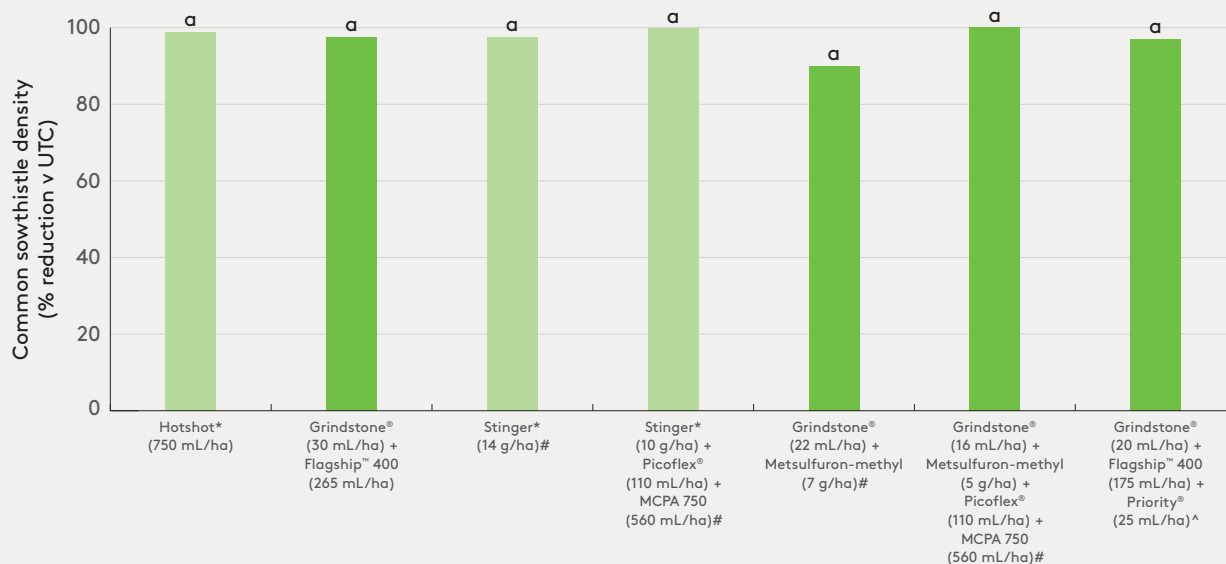
Figure 1: Grindstone post-em in wheat cv. Borlaug: Climbing buckwheat (2-8 leaf) control (45 DAA).



#Applied with BS1000* (0.1% v/v). ^Applied with Uptake* (0.5% v/v).

(AD-AU-21-H04-1, Blaxland, Qld, 2021)

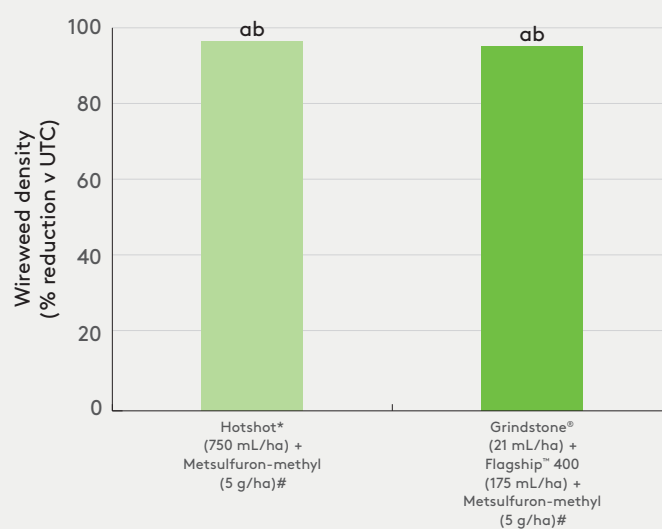
Figure 2: Grindstone post-em in wheat cv. Borlaug: Common sowthistle (4–8 leaf) control (45 DAA).



#Applied with BS1000* (0.1% v/v). ^Applied with Uptake* (0.5% v/v).

(AD-AU-21-H04-1, Blaxland, Qld, 2021)

Figure 3: Grindstone® herbicide post-em in barley cv. Moby: Wireweed (1–3 leaf and 4–6 branches) control (89 DAA).



#Applied with BS1000* (0.1% v/v).

(AD-AU-21-H04-2, Bony Mountain QLD, 2021)

Re-cropping interval

Grindstone® herbicide is ideal for use in Northern NSW and Queensland, where warmer climates, soil temperatures and summer rainfall are more conducive to the breakdown of soil residues, thereby enabling re-cropping flexibility.

Aminopyralid characteristics

Grindstone® herbicide contains 240 g/L aminopyralid, a member of the pyridine group of herbicides (Group 4), in a Soluble Liquid (SL) formulation. Aminopyralid is highly soluble (Table 2) and therefore does not bind tightly to soil organic carbon or soil particles. However, it can remain active in the soil for extended periods depending on application rate, soil type (clay content), rainfall, temperature, humidity, soil moisture and soil organic matter. Breakdown is fastest in warm and wet conditions and slower in cold and dry conditions.

Plant-back periods

The plant-back periods below (Tables 3 and 4) are based on a normal rainfall pattern following use of Grindstone plus Flagship™ 400. The plant-back period may be significantly longer during drought conditions or if less than 100 mm of rainfall occurs for a period of four months or greater. **Refer to the plant-back information on all product labels before using Grindstone® herbicide in tank-mixes with other herbicides.** The product with the longest plant-back period will determine the time between spraying and planting the next crop.

Table 2: Physical characteristics of aminopyralid.

Product	Solubility (mg/L)	Binding (KOC)	Half-life (DT50)
Aminopyralid	High (2480)	Very mobile (8.3)	21 days (range 8–35)
Metazachlor	Moderate (450)	Mobile (54)	55 days (range 19–73)
Clopyralid	High (7850)	Very mobile (5)	8 days (range 2–14)
S-metolachlor	Moderate (480)	Moderate (200)	21 days (range 11–31)

Table 3: Plant-back periods following application of Grindstone® herbicide (up to 32 mL/ha) as a tank-mix with Flagship™ 400 on black cracking clay soils. (Northern NSW & Queensland).

Winter crop	Plant-back period (months)	Summer crop	Plant-back period (months)
Wheat	4	Sorghum	3
Barley	4	Mung bean	5
Canola	4	Sunflower	5
Chickpea	6	Soybean	5
Faba bean	6	Cotton	9
Lucerne	6		

Table 4: Plant-back periods following application of Grindstone® herbicide (up to 20 mL/ha) as a tank-mix with Flagship™ 400 (Southern NSW, Victoria, South Australia & Western Australia).

Winter crop	Plant-back period (months)
Wheat	9
Barley	9
Canola	9
Chickpea, Faba bean, Field pea, Lucerne, Lupin, Medic, Subclover	20

Withholding periods

1. Cereal crops

Treated grain and livestock commodities are acceptable for export when Grindstone® herbicide is used in accordance with the label directions and the following withholding periods observed. For tank-mixes other than those listed below, always observe the withholding periods and/or export intervals for the partner product if these periods are longer than those for Grindstone® herbicide. Export requirements are subject to change. Consult your advisor or exporter for updated information about specific market requirements before use.

Tank-mixes with Flagship™ 400 EC:

Harvesting for grain: Not required
Cutting or grazing for stockfood: 7 days

Tank-mixes with metsulfuron-methyl:

Harvesting for grain: Not required
Grazing for meat production: 21 days[^]
Grazing for milk production: Not required
Cutting for animal feed: 21 days

[^]DO NOT send animals for slaughter that have grazed treated pasture within 21 days of application unless first placing the animals on clean feed for 3 days before leaving the farm.

Tank-mixes with metsulfuron-methyl + MCPA or Enforcer® 242:

Grazing for meat production: 21 days
Grazing for milk production: 7 days
Cutting for animal feed: 21 days

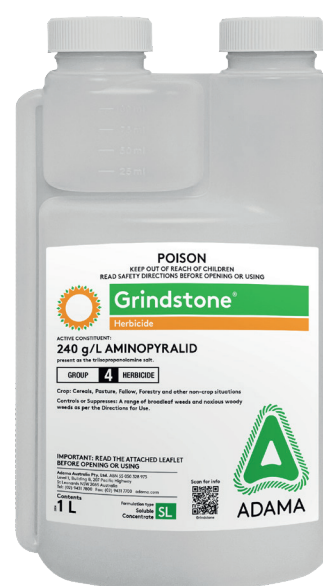
Refer to the 'Protection of Crops, Natives and Other Non-target Plants' section of the registered label for the management of residues in compost, mulches and animal waste.

2. Pasture

Refer to the Grindstone® herbicide label for withholding periods relating to pasture uses.

Product information

Active ingredient	240 g/L aminopyralid
Mode of action	Group 4 (Group I)
Formulation	Soluble Liquid (SL)
Target weeds	Broadleaf and woody weeds
Registered crops	Winter cereals, fallow, grass pasture, forestry and non-crop situations
Application timing	Post-emergent
Cropping and fallow application rate	16–32 mL/ha (refer to registered label)
Cropping and fallow water volume	Ground application: 50–100 L water/ha Aerial application: Minimum 30 L water/ha
Spray quality	COARSE droplet spectrum
Re-entry period	Once spray has dried
Rainfastness	1 hour



Always read and follow the product label directions of all tank-mix partners. **Care must be taken when tank mixing more than two products, particularly products that are not manufactured by ADAMA, due to potential variation in formulations or product quality. Seek competent advice or perform a jar test if unsure before proceeding.** Note that physical compatibility tests determine whether the products will mix and are suitable for application using commercial spray equipment. Physical compatibility tests do not check for adverse crop effects or the biological efficacy of the individual products when applied as a tank-mix. Recommendations for use, handling, storage and disposal of products may also change over time. The information contained in this document is not intended to replace the product label. The product label, safety data sheet and supporting product information can be viewed on the ADAMA website www.adama.com or by scanning the QR code located on this document or the product packaging.



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