



**PERMIT TO ALLOW MINOR USE OF AN AGVET CHEMICAL PRODUCT**

**FOR CONTROL OF TUSSOCK GRASSES**

**PERMIT NUMBER - PER9792**

This permit is issued to the Permit Holder in response to an application granted by the APVMA under section 112 of the Agvet Codes of the jurisdictions set out below. This permit allows a person, as stipulated below, to use the product in the manner specified in this permit in the designated jurisdictions. This permit also allows any person to claim that the product can be used in the manner specified in this permit.

**THIS PERMIT IS IN FORCE FROM 24 FEBRUARY 2010 to 30 NOVEMBER 2025**

**Permit Holder:**

NSW DEPARTMENT OF PRIMARY INDUSTRIES  
161 Kite Street  
ORANGE NSW 2800

**Persons who can use the product under this permit:**

Persons generally.

## CONDITIONS OF USE

### Products to be used:

#### **Fluazifop-P**

FUSILADE FORTE 128 EC HERBICIDE

Plus OTHER REGISTERED PRODUCTS

Containing: 128 g/L FLUAZIFOP-P present as the BUTYL ESTER as their only active constituent.

FUSILADE POST-EMERGENCE SELECTIVE HERBICIDE,

Plus OTHER REGISTERED PRODUCTS

Containing: 212 g/L FLUAZIFOP-P present as the BUTYL ESTER as their only active constituent.

#### **Flupropanate**

TASKFORCE HERBICIDE

TUSSOCK HERBICIDE

Plus OTHER REGISTERED PRODUCTS

Containing: 745 g/L FLUPROPANATE present as the SODIUM SALT as their only active constituent.

#### **Glyphosate**

NUFARM 360 HERBICIDE

ROUNDUP BIACTIVE HERBICIDE BY MONSANTO

Plus OTHER REGISTERED PRODUCTS

Containing: 360, 450 or 540 g/L GLYPHOSATE present as the ISOPROPYLAMINE SALT as their only active constituent.

#### **Haloxyfop**

VERDICT 520 HERBICIDE

Plus OTHER REGISTERED PRODUCTS

Containing: 520 g/L HALOXYFOP present as the HALOXYFOP-R METHYL ESTER as their only active constituent.

#### **Imazamox**

RAPTOR WG HERBICIDE

Plus OTHER REGISTERED PRODUCTS

Containing: 700 g/kg IMAZAMOX present as the AMMONIUM SALT as their only active constituent

#### **Imazethapyr**

SPINNAKER 700WDG HERBICIDE

Plus OTHER REGISTERED PRODUCTS

Containing: 700 g/kg IMAZETHAPYR as their only active constituent.

## **DIRECTIONS FOR USE:**

### **JURISDICTION:**

NSW, SA, WA, QLD, TAS, NT and ACT only.

### **GENERAL DIRECTIONS:**

PERSONS who wish to prepare for use and/or use products for the purposes specified in this permit must read, or have read to them, the DETAILS and CONDITIONS of this permit. Users MUST follow all instructions contained within this permit. This PERMIT provides for the use of registered products in a manner other than specified on the approved label of the product. Unless otherwise stated in this PERMIT, the use of the product must be in accordance with instructions on its label.

### **TARGET SPECIES, RATES AND METHODS OF APPLICATION:**

APPLY SPECIFIED PRODUCTS IN ACCORDANCE WITH THE INSTRUCTIONS AS CONTAINED IN TABLES 1 TO 6 (PAGES 5-12) OF THIS PERMIT.

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### **SITUATIONS & AREAS TO BE TREATED, APPLICATION INSTRUCTIONS, RESTRICTIONS AND OTHER DIRECTIONS:**

USERS MUST FOLLOW;

1. FOR ALL HERBICIDES *ADVISORY NOTES AND CRITICAL USE COMMENTS* ON PAGES 13-14 OF THIS PERMIT, AND
2. PRODUCT SPECIFIC *CRITICAL USE COMMENTS* ON PAGES 15-21 OF THIS PERMIT.

ADVISORY NOTES FOR ALL HERBICIDES	PAGE 13
CRITICAL USE COMMENTS FOR ALL HERBICIDES	PAGE 13-14
CRITICAL USE COMMENTS FOR FLUPROPNATE	PAGE 15-16
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**WITHHOLDING PERIODS:**

USERS MUST FOLLOW THE RELEVANT WITHHOLDING PERIODS CONTAINED ON PAGE 22 OF THIS PERMIT.

**ADDITIONAL DIRECTIONS:**

**TANK MIXING:**

**DO NOT** tank mix glyphosate with flupropanate unless a tank mix is directed for seed set suppression.

**BROADACRE APPLICATIONS:**

Apply broadacre treatments using either boomspray or aerial application.

**AERIAL APPLICATION:**

**DO NOT** apply glyphosate via aerial application at rates greater than; 4L/ha (for 360 g/L products);  
3.2 L/ha (for 450 g/L products) or  
2.6 L/ha (for 540 g/L products).

**TUSSOCK GRASSES COVERED UNDER THIS PERMIT INCLUDE:**

**African lovegrass** (*Eragrostis curvula*).

**Sporobolus species** including: giant Parramatta grass (*Sporobolus fertilis*), giant rat's tail grass (*Sporobolus natalensis*), giant rat's tail grass (*Sporobolus pyramidalis*), Parramatta grass (*Sporobolus africanus*), American rat's tail grass (*Sporobolus jaquomontii*), other introduced *Sporobolus* (*Sporobolus spp.*).

**Stipoid species** including: serrated tussock (*Nassella trichotoma*), Chilean needle grass (*Nassella neesiana*), Texas needle grass (*Nassella leucotricha*), plumerillo (*Jarava plumosa*), espartillo (*Achnatherum brachychaetum*), espartillo (*Achnatherum caudatum*), Uruguayan rice grass (*Piptochaetium montevidense*), Mexican feather grass (*Nassella tenuissima*), lobed needle grass (*Nassella charruana*), cane needle grass (*Nassella hyalina*), short-spined needle grass (*Nassella megapotamia*), rice millet (*Piptatherum miliaceum*), other introduced stipoid grasses (various).

**Other tussock grasses** including: Coolatai grass (*Hyparrhenia hirta*), thatch grass / cane grass (*Hyparrhenia rufa*), giant paspalum (*Paspalum urvillei*), tussock paspalum (*Paspalum quadrifarium*), setaria (*Setaria spp*), buffel grass (*Cenchrus ciliaris*), Mossman River grass (*Cenchrus echinatus*), paspalum (*Paspalum dilatatum*), vasey grass (*Paspalum urvillei*), African feather grass (*Pennisetum macrourum*), fountain grass (*Pennisetum setaceum*), long-style feather grass (*Pennisetum villosum*), whiskey grass (*Andropogon virginicus*), Rhodes grass (*Chloris gayana*), perennial veldt grass (*Ehrharta calycina*), panic veldtgrass (*Ehrharta erecta*), bahia grass (*Paspalum notatum*), phalaris (*Phalaris aquatica*), red Natal grass (*Rhynchelytrum repens*), prairie grass (*Bromus unioloides*), Queensland blue grass (*Dichanthium sericeum*), Yorkshire fog (*Holcus lanatus*), cocksfoot (*Dactylis glomerata*), other introduced *Eragrostis* (*Eragrostis spp*), and other introduced tussock grasses (various species that do not have significant runners and are not woody).

**Table 1: African Lovegrass (*Eragrostis curvula*)**

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
1. Broadacre Control	1.5 – 3L / ha	6 L / ha	4.8 L / ha	4 L / ha	
Double knock / split application		3 L / ha + 3 L / ha	2.4 L / ha + 2.4 L / ha	2 L / ha + 2 L / ha	Rates: One treatment followed later by another knockdown treatment such as herbicide or tillage. See critical comments for glyphosate.
2. Spot spray Control	150 - 300 mL / 100 L water	1 L / 100 L water	800 mL / 100 L water	660 mL / 100 L water	
3. Wiper Suppression	500 mL / 10 L water	3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
4. Broadacre Control, Seed check mixture or seed set suppression	1.5 – 3L / ha	380 - 630 mL / ha	300 - 500 mL / ha	250 - 420 mL / ha	Situation: Use only in situations listed for both herbicides. Rates: Apply glyphosate alone for seed set suppression; or for control mix flupropanate with glyphosate. Use higher glyphosate rate during late seed development or if the weed is dense.
5. Spot spray Control Seed check mixture or seed set suppression	150 - 300 mL / 100 L water	335 mL / 100 L water	270 mL / 100 L water	225 mL / 100 L water	Situation: Only in situations listed for both herbicides. Rates: Apply glyphosate alone for seed set suppression, or for control mix flupropanate with glyphosate.

**Table 2: Sporobolus weeds: Including giant Parramatta grass and other species listed above**

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
6. Broadacre Control	1.5 - 2 L / ha	6 L / ha	4.8 L / ha	4 L / ha	
Double knock / split applications		3 L / ha + 3 L / ha	2.4 L / ha + 2.4 L / ha	2 L / ha + 2 L / ha	Rates: One treatment followed later by another knockdown treatment such as herbicide or tillage. See critical comments for glyphosate
7. Spot spray Control	200 mL / 100 L water	1.0 L / 100 L water	800 mL / 100 L water	660 mL / 100 L water	
Double knock / split applications		1.0 L + 1.0 L / 100 L water	0.8 L + 0.8 L / 100 L water	0.7 L + 0.7 L / 100 L water	Rates: One treatment followed later by another knockdown treatment such as herbicide or tillage. See critical comments for glyphosate
8. Wiper Suppression	500 mL / 10 L water	3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
9. Broadacre Suppression of seedlings in improved pasture	0.5 - 2 L / ha				See flupropanate critical use comments for this treatment. Timing: Apply September to November inclusive; before pastures "bolt" in the spring flush. Rates: Low rate for sporobolus plants less than 10 cm high and less than 80 leaves on light soil; up to high rate for large plants on heavy soil.

**Table 3a: Serrated tussock (*Nassella trichotoma*) – flupropanate and glyphosate based products**

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
10. Broadacre Control	1.5 - 2 L / ha	2.8 – 4.0 L / ha	2.24 – 3.2 L / ha	1.9 – 2.7 L / ha	Rates: Glyphosate: use the lower rate on infertile lightly textured soils; use the higher rate on fertile basalt soils. Suppression only if serrated tussock plants are not actively growing with long green leaves. Addition of 200 mL of Wetter TX to 100 L of glyphosate spraying solution may improve control of serrated tussock.
11. Spot spray Control	100 - 200 mL / 100 L water	0.7 - 1.3 L / 100 L water	560 - 1000 mL / 100 L water	500 - 900 mL / 100 L water	Rates: Glyphosate: use the lower rate on infertile lightly textured soils; use the higher rate on fertile basalt soils.
12. Wiper Suppression	500 mL / 10 L water	3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
13. Broadacre suppression of seedlings in improved pasture	0.5 - 2 L / ha				Method: See flupropanate critical use comments for this treatment. Timing: Apply September to February inclusive; before pastures “bolt” in the spring flush, or later when improved species are dormant. Rates: Low rate for serrated tussock plants less than 10 cm high and less than 80 leaves on light soil; up to high rate for large plants on heavy soil.
14. Broadacre Control Seed check mixture or seed set suppression	1.5 - 2 L / ha	380 - 630 mL / ha	300 - 500 mL / ha	250 - 420 mL / ha	Situation: Only in situations listed for both herbicides. Rates: Apply glyphosate alone for seed set suppression, or for control mix flupropanate with glyphosate. Use higher glyphosate rate during late seed development or if the weed is dense. Surfactants: Addition of 200 mL of Wetter TX to 100 L of glyphosate spraying solution may improve control of serrated tussock.
15. Spot spray Control Seed check mixture or seed set suppression	150 - 200 mL / 100 L water	335 mL / 100 L water	270 mL / 100 L water	225 mL / 100 L water	Situation: Only in situations listed for both herbicides. Rates: Apply glyphosate alone for seed set suppression, or for control mix flupropanate with glyphosate.

**Table 3b: Serrated tussock (*Nassella trichotoma*) – haloxyfop, Imazamox and Imazethapyr based herbicide products**

Method of Application	Haloxyfop	Imazamox	Imazethapyr	Critical Use Comments
16. Spot spray Control	160mL product /100L Water + Uptake Spray Oil at 500mL/100L water			Haloxyfop (520g/L): Need to apply with Uptake spray oil at 500mL/100L water.  Spot spray treatment of Serrated Tussock is limited to infestations that are no greater than 10% of a paddock.
17. Pre-emergence control following initial knockdown of established plants.		50g product/ha + BS1000 or equivalent @ 200mL/100L water		Imazamox (700g/kg): Suited to pasture species mentioned on the label, i.e. legumes. Caution: likely to result in a degree of pasture damage, particularly where small pasture grass species are predominant.
18. For Pre-emergence control following initial knockdown of established plants.			700g/kg at 70-140g product/ha + 200mL/100L non-ionic surfactant	Imazethapyr (700g/kg): Suited to pasture species mentioned on the label, i.e. legumes. Caution, likely to suppress small pasture grass species



**Table 4a: Table 4a: Other Stipoid weeds/Needle grasses: Including Chilean Needle Grass and other species listed above**

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
16. Broadacre Control or suppression	1.5 – 3 L / ha	3.0 L / ha	2.4 L / ha	2.0 L / ha	Rates: Flupropanate provides useful control. Glyphosate may have variable results – suppression.
17. Spot spray Control or suppression	100 - 300 mL / 100 L water	1 L / 100 L water	800 mL / 100 L water	660 mL / 100 L water	Rates: Flupropanate provides useful control. Glyphosate may have variable results – suppression.
18. Wiper Suppression	500 mL / 10 L water	3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
19. Broadacre Control Seed check mixture or seed set suppression	1.5 – 3 L / ha	380 - 630 mL / ha	300 - 500 mL / ha	250 - 420 mL / ha	Situation: Only in situations listed for both herbicides. Rates: Mix flupropanate with a glyphosate. Use higher glyphosate rate during late seed development or if the weed is dense.
20. Spot spray Control Seed check mixture and seed set suppression	100 - 300 mL / 100 L water	335 mL / 100 L water	270 mL / 100 L water	225 mL / 100 L water	Situation: Only in situations listed for both herbicides. Rates: Mix flupropanate with glyphosate.

**Table 4b: Other Stipoid weeds/Needle grasses**

Method of Application	Fluazifop 128	Fluazifop 212	Critical Use Comments
21. Broadacre, Seed set suppression of Chilean needle grass	1.7 – 3.3 L / ha	1 - 2 L / ha	Situation: Legume pastures and lucerne only. DO NOT cut or graze for at least 6 weeks. Method: Apply using boomspray or aerial application. Add Supercharge 1% (1 L / 100 L water).

**Table 5: Coolatai grass (*Hyparrhenia hirta*)**

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
22. Broadacre Suppression	3 L / ha	6 L / ha	4.8 L / ha	4.0 L / ha	Situation: Only in situations listed for the herbicide. Broadacre method: Apply herbicide solution to the point of run-off from leaf surfaces – 1000-2000 L / Ha.
23. Spot spray Suppression	300 mL / 100 L water	2 L / 100 L water	1.6 L / 100 L water	1.3 L / 100 L water	Spot spray method: Apply herbicide solution to Coolatai grass to the point of run-off from leaf surfaces using high volume spot spray applicators.
24. Wiper Suppression	500 mL / 10 L water	3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	Timing: Glyphosate best time is September to May; 2-3 repeat treatments will be necessary. Flupropanate best time is July to October; once per season.
25. Spot spray Seed check mixture Suppress plants and suppress seeding	200 mL / 100 L water	2 L / 100 L water	1.6 L / 100 L water	1.3 L / 100 L water	Situation: Only in situations listed for both herbicides. Method: Apply herbicide solution to Coolatai grass to the point of run-off from leaf surfaces using high volume spot spray applicators. Timing: Apply to actively growing plants before flowering. Addition of flupropanate is most effective during spring, apply between July and October. Use this tank mix once per season Rates: Mix flupropanate with glyphosate.
26. Wiper Seed check mixture Suppress plants and suppress seeding	500 mL / 10 L water	335 mL / 10 L water	260 mL / 10 L water	220 mL / 10 L water	Situation: Only in situations listed for both herbicides. Timing: Apply to actively growing plants, prior to flowering. For glyphosate alone, repeat treatments 2-3 times through September to May. Addition of flupropanate is most effective during spring, apply between July and October. Use this tank mix once per season Rates: Mix flupropanate with glyphosate.

**Table 6: Other tussock grasses**

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
27. Tussock paspalum Spot spray Suppression		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
28. Giant paspalum Wiper Suppression		3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
29. Setaria Wiper Suppression		3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
30. Paspalum Broadacre Control		6 L / ha	4.8 L / ha	4.0 L / ha	Method: Wet to run-off, that is 800 - 1000 L/ha. The addition of wetting agent is recommended.
Spot spray Control		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
31. Rhodes grass Broadacre Control		6 L / ha	4.8 L / ha	4 L / ha	
Spot spray Control		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
32. Phalaris Broadacre Control		6 L / ha	4.8 L / ha	4 L / ha	Method: Cultivate and sow 7 – 21 days after treatment
Broadacre Suppression		1.5 L / ha	1.2 L / ha	1 L / ha	
Spot spray Control		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
33. Red Natal grass Broadacre Control		3 L / ha	2.4 L / ha	2 L / ha	Method: Cultivate and sow 7 – 21 days after treatment
34. Prairie grass Broadacre Control		6 L / ha	4.8 L / ha	4 L / ha	
Spot spray Control		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
35. Queensland bluegrass Broadacre Control		6 L / ha	4.8 L / ha	4 L / ha	
Spot spray Control		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
36. Yorkshire fog Broadacre Control		3 L / ha	2.4 L / ha	2 L / ha	
Spot spray Control		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	

Method of Application	Flupropanate	Glyphosate 360	Glyphosate 450 with adjuvant	Glyphosate 540	Critical Use Comments
37. Cocksfoot Broadacre Control Spot spray Control		6 L / ha	4.8 L / ha	4 L / ha	
		1 L / 100 L water	800 mL / 100 L water	670 mL / 100 L water	
38. Thatch or Cane grass Broadacre Control Spot spray Control	3 L / ha	6 L / ha	4.8 L / ha	4 L / ha	Timing: For best results using flupropanate, apply late winter to early spring. Optimal timing for glyphosate treatment is late autumn to early winter, however applications outside this optimum time have been satisfactory.
	300 mL / 100 L water	2 L / 100 L water	1.6 L / 100 L water	1.4 L / 100 L water	
39. Other introduced tussock grasses Suppression: Broadacre Spot spray Wiper	3 L / ha	6 L / ha	4.8 L / ha	4 L / ha	
	300 mL / 100 L water	1 L / 100 L water	800 mL / 100 L water	660 mL / 100 L water	
	500 mL / 10 L water	3.3 L / 10 L water	2.6 L / 10 L water	2.2 L / 10 L water	
40. Other introduced tussock grasses. Seed set suppression: Broadacre Spot spray Wiper	3 L / ha	380 - 630 mL / ha	300 - 500 mL / ha	250 - 420 mL / ha	Situation: Only in situations listed for both herbicides. Rates: Mix flupropanate with a glyphosate. Use higher glyphosate rate during late seed development or if the weed is dense.
	300 mL / 100 L water	335 mL / 100 L water	260 mL / 100 L water	225 mL / 100 L water	Situation: Only in situations listed for both herbicides. Rates: Mix flupropanate with glyphosate for suppression, or apply glyphosate alone for spray top suppression.
	500 mL / 10 L water	330 mL / 10 L water	260 mL / 10 L water	220 mL / 10 L water	Situation: Only in situations listed for both herbicides. Rates: Mix flupropanate with glyphosate for suppression, or apply glyphosate alone for spray top suppression.

## ADVISORY NOTES: ALL HERBICIDES

### **Integrated weed management:**

Integrated weed management plans (IWMP) for the control of weeds offer long term management options using a combination of different management and control methods and generally have a higher success rate than stand-alone treatments. However, this may not always be possible given the terrain and/or seasonal conditions where herbicide treatment outside of an IWMP may often be the only option.

Where feasible, extended control using IWMP is highly recommended but is not a mandatory requirement under this permit. This could comprise follow-up spraying, sowing pastures, resting pastures and employing agronomic practices that allow pastures to grow competitively.

Where the use of herbicide is chosen to be a part of an integrated weed management plan, a situation assessment is useful to determine the choice of treatments. All treatments rely upon subsequent treatments, including respraying, sowing, pasture spelling and others. As a guide, records should meet pesticide compliance and address your situation assessment, treatment choices, and other practicalities. The plan should justify the immediate treatment, acknowledge the necessary spelling, plant-back, or withholding periods, and suggest subsequent treatments.

Contact an agricultural adviser for further information on best practice. Department of Primary Industries websites or Weeds websites also offer extensive information and manuals on best practice for tussock grasses, especially Serrated Tussock and these techniques apply to a wide range of other tussock grass species. The [National Best Practice Management Manual - Serrated Tussock](#) is accessible from the link on the last page of this permit. This manual is designed to help provide effective management solutions for serrated tussock within a broader context of integrated weed management, providing information on the pest plant and best practice on existing control and management options.

## CRITICAL USE COMMENTS: ALL HERBICIDES

Follow all withholding, rest, and plant back periods on labels.

**Rates:** To ensure good efficacy, apply the rate shown and follow the optimal application times noted under the Critical directions column. Under unsuitable conditions, such as moisture stressed conditions or outside the optimum application times, lower efficacy (suppression) may result.

Apply mixtures of flupropanate and glyphosate herbicides **only** in situations that are indicated for both herbicides to help prevent seed set.

### **Application methods**

**General application:** See labels for specific techniques and critical comments.

**Broadacre treatments:** Broadacre spraying includes boom spray and aerial spray. While these can efficiently kill large areas of weeds, they can also kill large areas of desirable species - carefully read all restraints and cautions. Trailed wick wiping and continuous application over a large area using hand-held equipment is also considered to meet the definition of broadacre treatment. Unless weeds are dense and extensive, spot application should be preferred.

Increase application volumes (water rates per hectare) where weeds are dense, on difficult terrain, and for hard to wet species like Coolatai grass.

**Boom spray:** Where allowed and as directed on product labels.

**Aerial:** Where allowed and as directed on product labels.

**Spot spray:** Use a carefully directed spray; consider shielded nozzles.

To ensure best herbicide use, measure and calibrate application volumes, apply as an even spray pattern with complete and uniform wetting of all foliage, using a coarse spray quality. Typically 1,000 L application volume per hectare is best practice, however, where terrain is difficult or equipment is limited, low volume application is acceptable.

Consider using herbicide dye as a marker. DO NOT use a knockdown herbicide as a marker.

**Wiper / wick use:** Ensure weeds are at least 15 cm above species to be retained. Apply when weeds are actively growing. To avoid damage to desirable species; heavily graze 4-6 weeks prior to application. In ungrazed areas, slash or burn and allow for regrowth to target weed species. This will ensure a sufficient height differential between beneficial and weed species. In dense vegetation, some contact with desirable species can occur.

If possible conduct two passes in opposite directions to obtain sufficient coverage of weed foliage. A repeat application may be required to control misses and to achieve a suitable level of control. Ground speed should not exceed 8 km/hr.

Where possible, calibrate application so that wiper remains moist but does not drip excessively, and a continuous patch of weeds does not receive more than the amount of herbicide that would be applied using a broadacre treatment.

For hand held wipers - use spot spray restraints.

## CRITICAL USE COMMENTS:

### FLUPROPANATE (745 g/L product)

**Mode of action:** Flupropanate may be slowly absorbed by the root system and control may take 3-12 months depending on weather conditions and senescence of plant foliage. Flupropanate will selectively kill certain plants, while others are reasonably tolerant. Residues in the soil may suppress weeds and other susceptible species for one or two years.

**Herbicide group:** Group J herbicide.

**Timing:** May be applied all year round.

Especially for broadacre treatments, best results are achieved when applied to actively growing stress free weeds, particularly in warm periods.

In areas with seasonal rainfall, useful application may be made prior to rainfall events that will bring plants into active growth (avoid runoff events).

In the tablelands and cooler regions of SE Australia, useful application can be made just before growing seasons, to just prior to first frosts. Poor results have occurred when applied in dry winters.

Poor results have occurred when applied in severe droughts or to weeds retarded by burning.

**Seed set suppression:** Suppression of seed set is only successful if application is made several months before seed set. However, some species, including *Sporobolus* set seed all year in warm areas. Consider spray-topping mixtures with glyphosate.

**Seedling suppression:** Residuals of flupropanate may suppress susceptible seedlings for one or two years. This is a considerable advantage where tolerant desirable species are dominant. Alternatively, very low rates may be applied to a flush of small seedlings. Desirable species must be allowed to recover and smother surviving weeds. A suggested rate for *sporobolus* and for serrated tussock in pastures is provided.

**Site preparation:** Where practicable, lightly graze desirable species prior to spraying to help prevent them from covering weeds.

**Application:** Ensure spray volume is calibrated to achieve complete coverage of foliage.

**Mixtures:** Except for seed set prevention, do not mix with any other herbicide.

**Post-application care:** Avoid restocking or cutting pasture areas until pasture has reasonably recovered. Remaining weeds can be spot treated (hoe or herbicide).

**Frequency of application:** DO NOT apply unless pesticide records indicate that no more than 3 L per hectare will be applied in any 12 month period; a lower rate is suggested where susceptible desirable species are present. Split applications may be applied. For example, boom spray a low rate to kill seedlings, then spot spray adults. However, do not repeat a treatment after a suspect 'product failure' until at least 12 months.

**Off target damage:** Will stunt eucalypt seedlings; will damage or kill pine, acacia and casuarina seedlings, sub-clover, certain grasses and other susceptible species. Species known to be susceptible to flupropanate includes legumes, particularly young subterranean clover; and weeping grass, wallaby grass, spear grass. 'Tolerant' species that may be affected by

flupropanate, but should recover, include phalaris, cocksfoot, tall fescue, kangaroo grass, red-leg grass, *Poa* or silver tussock.

**Rates:** Where a range of rates are provided: use lower rates on slate, shale or granite soils; use higher rates on basalt or clay soils.

Higher rates will kill many species.

In order to minimise off-target damage, use the lowest rate that will kill target weeds.

Lower rates may be suitable to control seedlings or small plants.

**Restrains:** DO NOT reseed areas treated with flupropanate until at least 100 mm of leaching rain has fallen.

DO NOT use flupropanate in channels, drains or water courses; do not apply above 3 L/ha to steeply sloping sites.

DO NOT spray near desirable susceptible trees.

**Spot spray situations:** Agriculture: pasture, grazed woodlands and agricultural non-crop situations. Non-crop situations: wasteland, forest and conservation areas, roadsides and easements, rights of way, commercial and industrial areas, areas surrounding agricultural buildings. Domestic and public service areas: golf courses, public service areas.

**Boom spray situations:** Agriculture: pasture, grazed woodlands and agricultural non-crop situations. Non-crop situations: wasteland, woodland, forest and conservation areas, roadsides and easements, rights of way, commercial and industrial areas.

**Aerial spray situations:** Agriculture: pasture, grazed woodlands and agricultural non-crop situations. Non-crop situations: wasteland, woodland, roadsides and easements, rights-of-way.

**Wiper / wick use situations:**

Agriculture: pasture, grazed woodlands and agricultural non-crop situations. Non-crop situations: wasteland, forest and conservation areas, roadsides and easements, rights of way, commercial and industrial areas, areas surrounding agricultural buildings. Domestic and public service areas: golf courses, public service areas.



**CRITICAL USE COMMENTS:**  
**GLYPHOSATE** (360, 450 and 450 g/L products)

**Mode of action:** Glyphosate is a foliar absorbed herbicide. Treated areas are normally browned off in a fortnight. It is non-selective.

**Herbicide group:** Group M herbicide.

**Timing:** Apply to actively growing, stress free plants. Best control occurs when weeds are at the early seed head stage.

**Seed set suppression:** For spray-topping / seed-check, best apply before seed head emergence. Use higher rate from the milky dough stage or on dense infestations. Graze hard after treatment with only glyphosate. Will also affect desirable species. Low rates suppress plants but will not kill them without addition of flupropanate – ‘Seed check mixture’.

**Double knock / split applications:** When preparing for sowing, several treatments are often necessary to destroy existing weeds, and to kill subsequent germinations. Where a knock down treatment will be followed by another knock down treatment useful control, and savings, occur if glyphosate is initially applied, at flowering, at half the recommended rate. The second treatment may then comprise either ploughing (after brown-out), or the application of glyphosate at half the recommended rate once the target species has made significant regrowth (20 cm). This technique is useful for African lovegrass and giant Parramatta grass.

**Site preparation:** In situations where weeds have a large amount of dead foliage slash or burn up to 12 months prior to application to encourage fresh regrowth. Higher rates will be required if dead foliage is not controlled prior to application.

**Application:** Ensure spray volume is calibrated to achieve complete coverage of foliage.

**Additives:** Add an appropriate wetter at the concentration indicated on label.

**Post-application care:** Reseeding of large treated areas should be undertaken to restrict weed re-establishment. Spray-topped pasture should be spelled in the next growing season to aid recovery. Surviving weeds can be spot treated (hoe or herbicide), tilled or repeat this treatment.

**Frequency of application:** No restrictions.

**Off target damage:** Will kill or damage all desirable species; some species may be tolerant when completely dormant or defoliated.

**Rates:** Use highest indicated rates for hard to kill species including serrated tussock, Rhodes grass, paspalum grasses.

**Restraints:** See label. DO NOT apply to desirable pastures or other vegetation unless site is being prepared for sowing, is completely dormant, or is being spray-topped.

**Spot spray situations:** Agriculture: pasture, grazed woodlands, agricultural areas prior to sowing, tree and vine crops, lucerne and agricultural non-crop situations. Non-crop

situations: wasteland, woodland, forest and conservation areas, margins of aquatic areas, roadsides and easements, rights of way, commercial and industrial areas, areas surrounding agricultural buildings.

Domestic and public service areas: Turf, domestic areas, golf courses, playing fields, public service areas.

**Boom spray situations:**

Agriculture: pasture, grazed woodlands, agricultural areas prior to sowing, tree and vine crops and agricultural non-crop situations. Non-crop situations: wasteland, woodland, forest and conservation areas, roadsides and easements, rights of way, commercial and industrial areas. Domestic and public service areas: public service areas.

**Aerial spray situations:** Agriculture: pasture, agricultural areas prior to sowing.

**Wiper / wick use situations:** Agriculture: pasture, grazed woodlands, agricultural areas prior to sowing, tree and vine crops, lucerne and agricultural non-crop situations. Non-crop situations: wasteland, woodland, forest and conservation areas, margins of aquatic areas, roadsides and easements, rights of way, domestic, commercial and industrial areas, areas surrounding agricultural buildings. Domestic and public service areas: Turf, domestic areas, golf courses, playing fields, public service areas.

## CRITICAL USE COMMENTS:

### FLUAZIFOP (128 and 212 g/L products)

**Mode of action:** Fluazifop is a foliar absorbed herbicide that selectively kills certain grasses amongst legumes and other broadleaf crops.

**Herbicide group:** Group A herbicide.

**Timing:** Apply to actively growing, stress free plants.  
For seed suppression application should be made prior to heading.

**Response:** Control may take 3 - 5 weeks after application.

**Spot spray, boom spray, aerial spray, wick / wiper situations:** Agriculture: legume pastures, lucerne.

## CRITICAL USE COMMENTS:

### HALOXYFOP (520 g/L product)

**Mode of action:** Haloxyfop has the ACCase Inhibitor mode of action used for the post-emergent control of a wide range of weeds in various crops as stated on the label.

**Herbicide group:** Group A herbicide

**Timing:** Apply to actively growing weeds which are not moisture stressed. Wait for leaves of the grasses to be fully expanded before spraying (particularly after grazing or hay making)

**Application:** Applied as a **Spot Treatment only**. Ensure spray volume is calibrated to achieve complete coverage of foliage.

**Mixtures:** Haloxyfop (520 g/L) is NOT COMPATIBLE with 2,4-D or MCPA as sodium or amine salts. Check label for compatibility with other products.

Only mix sufficient solution for immediate use. Haloxyfop (520 g/L) and any other tank mixes should be applied immediately for best results.

**Restraints:** DO NOT apply to weeds which may be stressed (not actively growing) due to prolonged periods of extreme cold, moisture stress (waterlogged or drought affected), poor nutrition or previous herbicide treatment as reduced level of control may result.  
DO NOT spray if rain is likely to occur within one hour.

**Additives: Spraying Oils:** It is essential to add an adjuvant to Haloxyfop (520 g/L). Best results will be achieved with Uptake\*Spraying Oil at 500 mL/100 L of spray solution. When other crop spraying oils are used, mix at 1 L/100 L and add a non-ionic wetter (surfactant) at 200 mL/100 L of spray solution.

**Non-ionic Wetters:** When Uptake or other oils are not used, a 100% concentrate non-ionic wetting agent such as BS-1000® at 200 mL/100 L must be used along with the higher rate of Verdict 520 as specified in the *Directions for Use*.

**Spot spray situations:** Agriculture: Lucerne, medic, clover or legume based pastures.

## CRITICAL USE COMMENTS:

### IMAZAMOX (700 g/kg product)

**Mode of Action:** Imazamox is a member of the imidazolinone group of herbicides. The product has the ALS mode of action. Water dispersible granule herbicide for the post-emergence control of certain annual grass and broadleaf weeds in field peas, legume-based pastures, lucerne, peanuts and soybeans as specified in the *Directions for Use* table.

**Herbicide Group:** Group B herbicide

**Timing: Seedling:** Apply to legumes after full emergence of the third trifoliolate leaf but well before commencement of flowering. Use for pre-emergence control following initial knockdown of established plants. Suited to pasture species on the label, e.g. legumes.

Caution: likely to result in a degree of pasture damage, particularly where small pasture grass species are predominant.

**Application:** For ground application only. Apply with boom equipment in not less than 50 L/ha water using flat fan nozzles. Avoid overlap and do not overspray headlands.

DO NOT apply by aircraft.

DO NOT apply by mister.

Imazamox (700 g/kg) should be applied a minimum of two hours before rainfall or irrigation. DO NOT apply Imazamox (700 g/kg) more than once per growing season.

**Mixtures:** Imazamox (700 g/kg) is a water dispersible granule formulation. Part fill tank, then with agitator running at the required amount of product. When mixing with other compatible products always add the other product first, mix thoroughly and then add this product.

A spray adjuvant MUST ALWAYS be added, as per the *Directions for Use* table, while Boost liquid ammonium sulphate should also be added in situations indicated in the table.

**Boom spray situations:** Agriculture: legume based pastures, Lucerne, medic, clover.

## CRITICAL USE COMMENTS:

### IMAZETHAPYR (700 g/kg product)

**Mode of Action:** Imazethapyr is a member of the imidazolinone group of herbicides. The product has the ALS mode of action. It is a water dispersible granule herbicide for the pre or post-emergence control of certain annual grass and broadleaf weeds in field peas, legume-based pastures, lucerne, peanuts and soybeans as specified in the *Directions for Use* table.

**Herbicide Group:** Group B Herbicide

**Timing:** Pre-emergence to serrated tussock.

**Application:** Imazethapyr (700 g/kg) should not be applied for a minimum of two hours before rainfall or irrigation. Ground Application: Apply in 50 to 100 L/ha water using flat fan nozzles. Aerial Application: (Pre-Emergent only) Avoid overlaps when spraying, apply in minimum of 20 L/ha water in a maximum swath width of 18 m using a droplet VMD of 230-280 microns. DO NOT apply Imazethapyr (700 g/kg) under conditions (e.g., dead calm, excessive wind and/or small droplets) likely to cause spray drift.

**Mixtures:** A non-ionic surfactant, or an adjuvant as specified in the DIRECTIONS FOR USE, must be added to Imazethapyr (700 g/kg) for post-emergence weed control @ 200 mL/100 L. The addition of a liquid ammonium sulphate at a rate of 2 L/100 L water may assist in post-emergence control of summer growing weeds.

**Restrains:**

DO NOT apply to very wet soils if rain is imminent or to soils prone to waterlogging.  
DO NOT apply to soils of very high organic matter content.

**Boom spray situations:** Agriculture: Established lucerne

## WITHHOLDING PERIODS

### **Fluazifop:**

DO NOT graze or cut for stock food for 6 WEEKS after application.  
DO NOT slaughter animals for 7 DAYS after grazing on treated pasture.

### **Flupropanate:**

Broadacre: DO NOT graze or cut for stock food for at least 4 MONTHS after application. Spot spray: DO NOT graze or cut for stock food for at least 14 DAYS after application. Stock are not to be grazed in treated areas for at least 14 DAYS prior to slaughter.  
DO NOT graze lactating cows or goats in treated areas.

**Glyphosate:** Not required when used as directed.

### **Haloxyfop:**

Harvest: Not required when used as directed for certain crops. See label for details.  
Grazing: DO NOT graze or cut for stock food for 28 DAYS after application

### **Imazamox:**

Grazing: DO NOT graze or cut for stock food for 6 WEEKS after application  
Harvest: Not required when used as directed

### **Imazethapyr:**

Grazing: Do not cut for stock food for 14 DAYS after application  
Harvest: Not required when used as directed

Issued by the Australian Pesticides and Veterinary Medicines Authority

#### Notes:

09/09/2010. Jurisdiction extended to include South Australia. Issued as version 2.  
30/09/2010. Jurisdiction extended to include Western Australia. Issued as version 3.  
05/11/2011. Jurisdiction extended to include Queensland. Issued as version 4.  
29/11/2012. Clarified Domestic and Public service area situations. Issued as version 5.  
12/02/2013. Jurisdiction extended to include Tasmania. Issued as version 6.  
30/10/2015. Extended expiry date to 30/11/2020. Issued as version 7.  
7/9/2016. Herbicide products containing Haloxyfop, Imazamox or Imazethapyr as the only active constituent listed under *Products to be Used* and additions/amendments made to *Conditions of Use*. Expiry date extended to 30/11/2025. Issued as version 8.  
16/12/2016. Jurisdiction extended to NT

Internet Link to the [National Best Practice Management Manual - Serrated Tussock](http://weeds.ala.org.au/WoNS/serratedtussock/):  
<http://weeds.ala.org.au/WoNS/serratedtussock/> (accessed 7/9/2017)