Pasture. Future.

The next generation has arrived.

Grazon* Extra.

A new herbicide that controls even the toughest weeds in tough conditions.

The growth regulator herbicides, specifically 2,4-D and MCPA, began a new era in chemical weed control in the 1940s. This was followed by the introduction of pyridine class compounds in the 1960s and 1970s. Now, Dow AgroSciences has delivered the next generation to this herbicide class. Aminopyralid is a new active ingredient from the pyridine class of compounds.

Class	Common name	Year introduced
Pyridine	picloram	1963
	triclopyr	1973
	aminopyralid	2007

New active ingredient

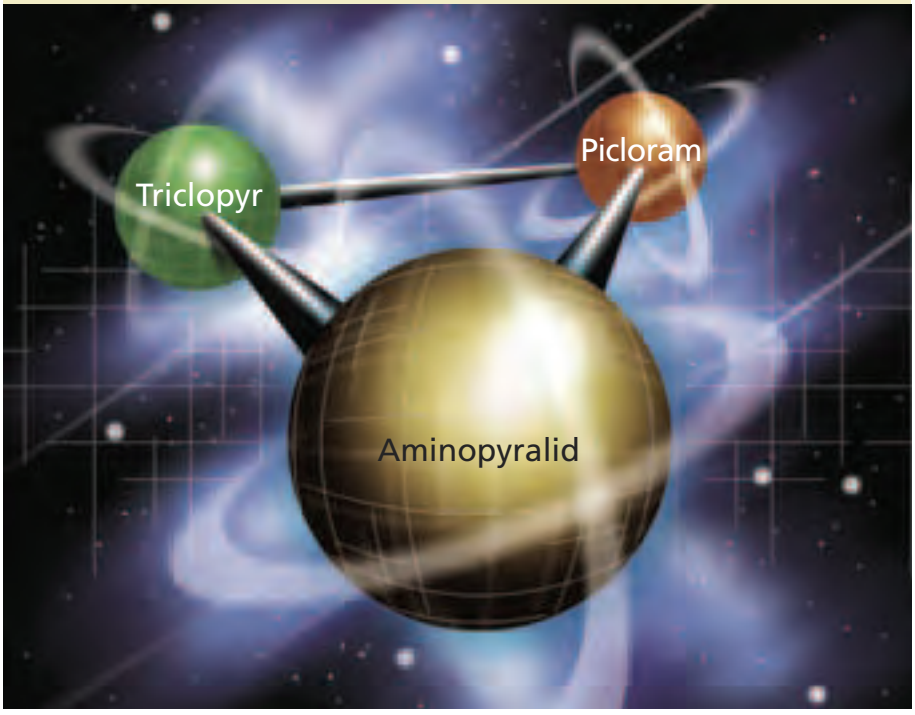
Aminopyralid, like other growth regulator herbicides, selectively controls broadleaf weeds in grasses.

But there are some key differences in terms of environmental risk management when controlling woody weeds:

- Higher specific activity than other growth regulator herbicides, and so can be used at lower rates
- Significantly shorter half-life than picloram
- More persistent than metsulfuron and glyphosate
- Relatively immobile in soil.

Grazon Extra includes the active constituents:

- 8 g/L AMINOPYRALID present as hexyloxypropylamine salt
- 100 g/L PICLORAM present as hexyloxypropylamine salt
- 300 g/L TRICLOPYR present as butoxyethyl ester



Works longer.

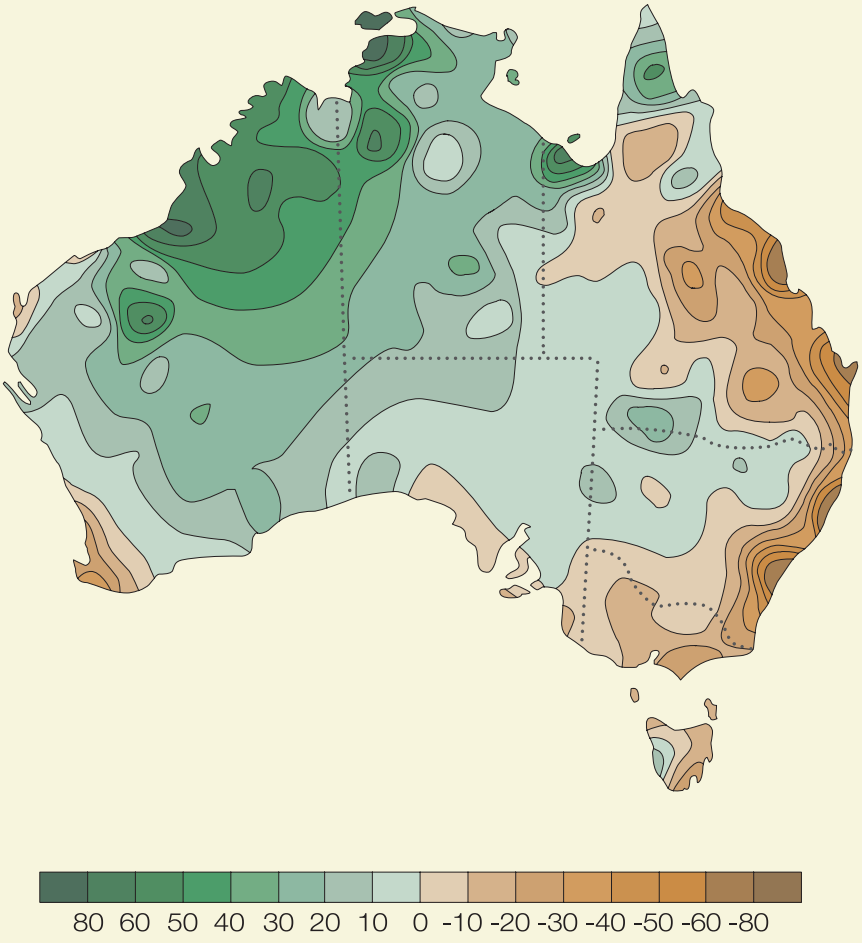
Grazon Extra works better. Works longer.

Tougher conditions? You need Extra. Grazon Extra.

The average trend (mm/decade) in annual total rainfall throughout Australia during the past half century is showing a strong trend towards drier conditions over much of eastern Australia and the south-west corner.

Drier or uncertain conditions mean herbicides need to perform under conditions that are tougher than previously experienced. Grazon Extra now offers the extra robustness to deliver better results.

Average trend in total rainfall (mm/10 years) 1950–2001



Source: 1301.0 - Year Book Australia, 2003 ABS

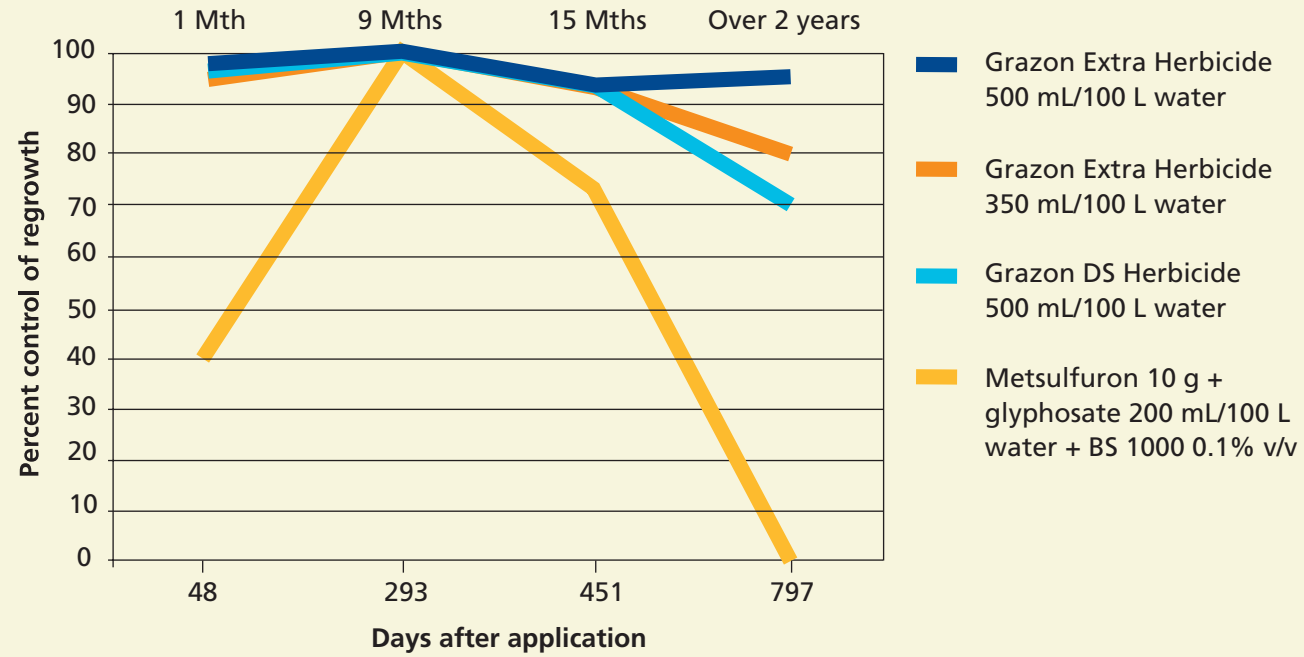
Drier or uncertain conditions mean herbicides need to perform under conditions that are tougher than previously experienced.

Extra results.

Grazon Extra delivers extra results.

Hard-to-kill blackberry regrowth (mature bushes previously slashed several times prior to a herbicide treatment in 2003) that was up to 1 m high was targeted in Batemans Bay, New South Wales. As part of the extensive research program, two trials were set up: the first in Feb 2005 (052001CP) sprayed under good growing conditions, the second in Apr 2005 (052002CP) conducted in tough conditions.

Grazon Extra suppresses regrowth over two years

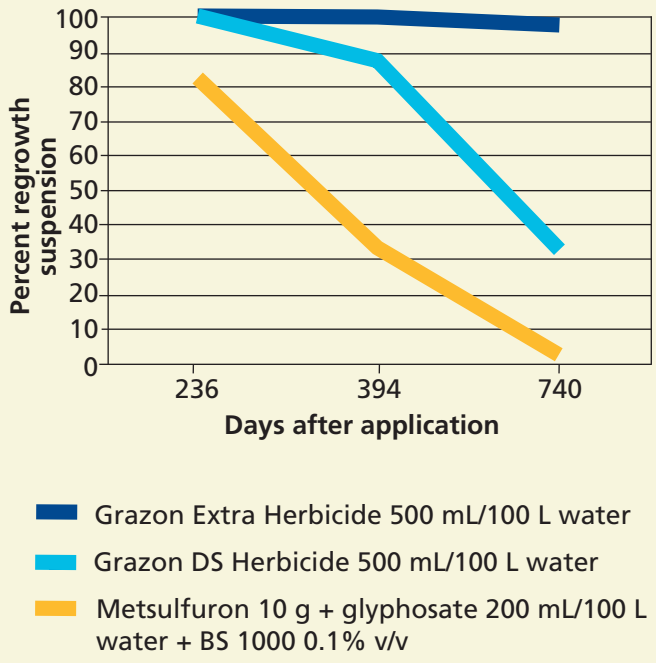


Source: Trial site 052001CP

Grazon Extra outperforms the competition

In the first trial, Grazon Extra outperformed both Grazon DS and a metsulfuron-methyl + glyphosate mix at 797 days after application. Metsulfuron/glyphosate treatments showed complete regeneration of blackberry by the end of the trial despite promising control at nine months. The addition of aminopyralid in Grazon Extra provided greater control of blackberry compared to Grazon DS at both an equivalent rate of 500 mL/100 L water and even at 350 mL/100 L water.

Grazon Extra suppresses regrowth in tough conditions



Source: Trial site 052002CP

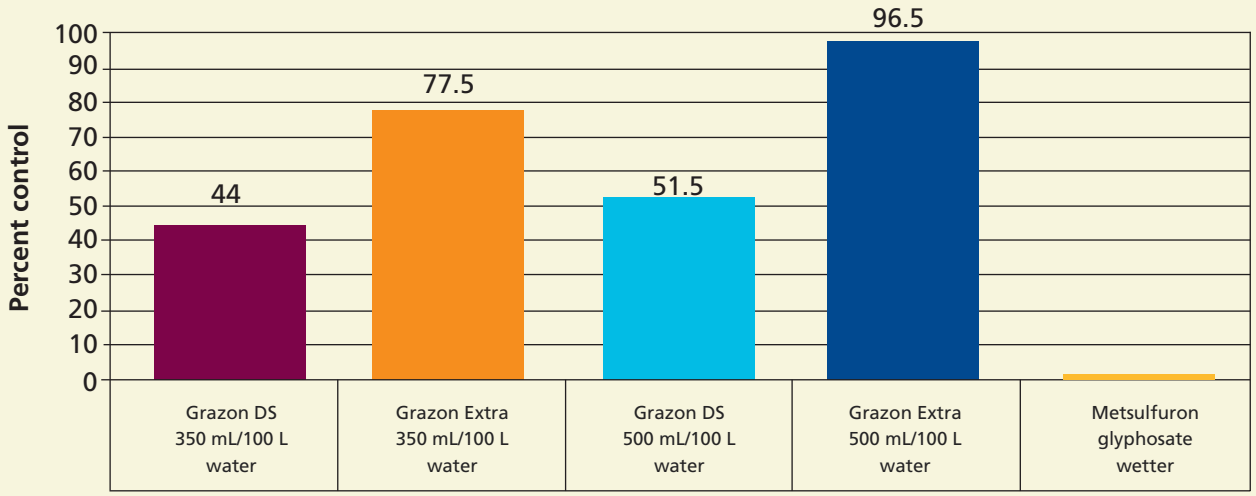
Greater control

The second trial (Trial 052002CP) was sprayed in April 2005 when the conditions were tough (poor soil moisture).

This trial showed that initial brownout or weed control at nine months is no indicator of final levels of weed control two years later. The addition of aminopyralid in Grazon Extra provided much greater control of regrowth on blackberry compared to Grazon DS at 740 days after application.

When the average of the two trials is considered (see below), Grazon Extra outperformed Grazon DS, and the metsulfuron + glyphosate treatment had completely regrown.

Grazon Extra outperforms Grazon DS over two years (average across both application timings)



Source: Trial site 052002CP, 052001CP

Extra tough.

Grazon Extra is not only extra tough on key noxious weeds but also extra tough on secondary weeds.

Often the biggest failing of weed control programs is the invasion of secondary weeds. Removal of the primary weed often results in another weed filling the vacated space. Seedbeds under the controlled weed often harbour the seeds of thistles and other invasive weeds just waiting for the opportunity to take the place of the weed you have just eradicated.

Grazon Extra is registered to control blackberry in association with docks, ragwort, St. John's wort and thistles.

Weeds	Grazon Extra	Grazon DS	Lantana 600	Ripper*480[1]	metsulfuron
African boxthorn	✓	✓		✓	
Camphor laurel	✓	✓		✓	
Capeweed	✓			✓	
Cockspur thorn	✓	✓			
Creeping lantana	✓	✓			
Crofton weed	✓	✓		✓	✓
Eucalypt regrowth	✓	✓		✓	✓ Some species
Fireweed	✓				
Green cestrum	✓	✓			
Groundsel bush	✓	✓		✓	
Lantana	✓	✓	✓	✓	
Limebush	✓	✓			
Milfoil	✓				
Mistflower	✓	✓		✓	✓
Mother-of-millions	✓	✓			
Paterson's curse	✓			✓	✓
Sicklepod	✓	✓	✓		
Smartweed	✓	✓			✓
Spear thistle	✓			✓	
Wattle regrowth	✓	✓			
Wild tobacco tree	✓	✓			

For more information on growth stage, rates per 100 L of water and critical treatment comments, refer to the product label.

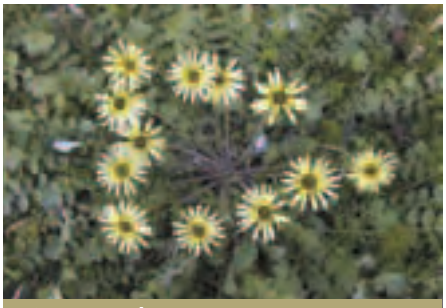
* Data from registered label based on use of herbicide alone. Please refer to product labels for complete directions for use.
1 480 g/L glyphosate from Dow AgroSciences.

Extra weeds.

Prevent secondary weed invasion.

Weed	Cost to agriculture**	Controlled by Grazon Extra
Paterson's curse* (*Echium plantagineum*)	Weed produces tens of thousands of seeds by late spring. Occurs on more than 30 million hectares in Australia, and by 2002 costing the wool and meat industries $125 million each year.	✓
Nodding thistle† (*Carduus nutans*) (alternate name musk thistle) Slender thistles† (*Carduus* spp.)	Thousands of seeds per square metre of soil with seeds able to remain viable for 10 years or more. Estimates of annual losses exceed $5 million.	✓
Scotch thistle† (*Onopordum acanthium*)	Costing $15–20 million per year. Produce up to 20,000 seeds and, left uncontrolled, can seriously impact on the stocking rates of grazing lands. Seeds can remain viable for more than 20 years.	✓
Variegated† (*Silybum marianum*) and saffron (*Carthamus lanatus*) thistles	Decrease pasture productivity and contribute to vegetable fault in wool.	✓
Spear thistle* (*Cirsium vulgare*)	Decrease pasture productivity.	✓

† Grazon Extra is registered for control of thistles in association with blackberry.
* Grazon Extra has a registered claim.
** Source: www.csiro.au/resources/ps29o.html


Capeweed


Fireweed


Saffron thistle


Paterson's curse


Scotch thistle

Grazon* Extra Herbicide.

Active constituents include 8 g/L AMINOPYRALID present as hexyloxypropylamine salt, 300 g/L TRICLOPYR present as butoxyethyl ester and 100 g/L PICLORAM present as hexyloxypropylamine salt. Grazon Extra is a Group I herbicide for the control of a range of environmental and noxious woody and herbaceous weeds.

Woody weed situations

High volume spraying

Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way

Weeds controlled	Weed growth stage	State	Rate/100 L water	Critical comments
African boxthorn	Less than 2 m tall	All states	500 mL	Apply when bushes have good leaf cover, growth and no leaf fall.
Angophora spp.	1 to 3 m tall		350 mL	
Australian blackthorn	Less than 2 m tall		500 mL	Apply from late spring to early autumn.
Banksia spp.	1 to 3 m tall		350 mL	
Biddy bush (Chinese shrub) (Sifton bush)	Autumn when actively growing	ACT, NSW only	500 mL	Add a 100% concentrate non-ionic surfactant (e.g. BS 1000®) at 125 mL/100 L of water for best results.
Blackberry in association with: Docks Ragwort Smartweed Thistles	Late spring to autumn	All states	350 mL or 500 mL	Use the higher rate on plants that have been damaged by grazing stock or insects and on known difficult-to-kill blackberry. Where herbicides other than Group I herbicides have been used, allow two seasons regrowth to occur before respraying with Grazon Extra.
Blue heliotrope	Flowering	ACT, NSW, NT, Qld only	500 mL	Apply in a minimum spray volume of 1250 L/ha.
Brooms: Cape English Flax leaf	Spring to mid-summer prior to pod formation	All states	250 mL	Apply as a thorough foliage spray.
Montpellier	Autumn to winter		350 mL	
Camphor Laurel	Less than 2 m tall			
	Above 2 m tall		500 mL	
Capeweed	Flowering		150 mL	
Casuarina spp.	1 to 3 m tall		350 mL	

Woody weed situations

High volume spraying

Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way

Weeds controlled	Weed growth stage	State	Rate/100 L water	Critical comments
Chinee apple	Less than 2 m tall	NT, Qld, WA only	350 mL	Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Cockspur thorn	Spring to autumn	ACT, NSW, NT, Qld only		Apply as a thorough foliage spray.
Common sensitive plant	Any time when actively growing	NT, Qld, WA only	200 mL	To avoid leaves closing during application, spray plants while moving forward. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Crofton weed	Spring to autumn	ACT, NSW, NT, Qld only	350 mL	Apply as a thorough foliage spray.
Eastern cotton bush (*Maireana microphylla*)	Spring to autumn		500 mL	Add Uptake* Spraying Oil at 500 mL/100 L of water. Some bushes may require a follow-up spray to control regrowth.
Eucalyptus spp.	Seedling and regrowth from small lignotubers, 1 to 3 m tall	All states	350 mL or 500 mL	Apply the higher rate where difficult to control species of eucalyptus regrowth is present. Addition of an adjuvant may improve results – contact Dow AgroSciences for details.
Fireweed	Flowering		350 mL	Apply as a thorough foliage spray.
Galenia	Fresh growth in spring to summer		500 mL	Use 2000 L of spray mixture/ha.
Giant bramble	Spring to autumn	NT, Qld, WA only		Penetration of thick clumps may be difficult and respraying may be necessary. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Gorse	1 to 1.5 m tall	All states	250 mL	Spring and summer treatment only. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
	Over 1.5 m tall or autumn treatment		350 mL	Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
	Winter treatment		500 mL	Brownout may not be complete until summer. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Groundsel bush (*Baccharis halimifolia*)	1 to 1.5 m tall in spring to summer		250 mL	Apply as a thorough foliar spray.
	Over 1.5 m tall or autumn treatment		350 mL	

Woody weed situations

High volume spraying

Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way

Weeds controlled	Weed growth stage	State	Rate/100 L water	Critical comments
Green cestrum	Late spring to early autumn	ACT, NSW, NT, Qld only	500 mL	One application may give satisfactory control. Any subsequent regrowth and seedlings must be resprayed at approximately 1 metre high.
Hawthorn	Less than 2 m tall	All states		Apply from late spring to early autumn.
Horehound	Pre-flowering		350 mL	Apply as a thorough foliar spray.
Japanese sunflower		ACT, NSW, NT, Qld only		
Lantana (*Lantana camara*) (*Lantana montevidensis*)	Up to 1 m tall in summer to autumn	All states		Add one of the following adjuvants, when using 350 mL rate: Uptake* Spraying Oil @ 0.5% v/v, Pulse® Penetrant @ 0.1% v/v.
	1 to 2 m tall in summer to autumn		500 or 750 mL	Thoroughly wet foliage stems and soil around the base of the plants. Use higher rate on known harder-to-kill varieties.
Limebush	Any time of year with good leaf cover and soil moisture	NT, Qld only	350 mL	Penetration of thick clumps may be difficult and respraying may be required. Addition of an adjuvant may improve results – contact Dow AgroSciences for details.
Lion's tail (*Leonatis nepetifolia*)	At flowering		200 mL	Apply as a thorough foliar spray. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Manuka	Pre-flowering	Vic only	500 mL	For optimum results, add Pulse Penetrant at 200 mL/100 L of spray. Thoroughly wet foliage, stems and soil around the base of the plants.
Mesquite (*Prosopis* spp.)	Seedling, full leaf and flowering before podding	ACT, NSW, NT, Qld, WA only	350 mL	DO NOT spray plants bearing pods. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Prosopis velutina		NT, Qld only	670 mL	
Milfoil (Yarrow)	Flowering	ACT, NSW only	350–500 mL	Use lower rate when in close proximity to highly sensitive vegetation.
Mistflower	Spring to autumn	ACT, NSW, NT, Qld only	350 mL	Apply as a thorough foliar spray.
Mother-of-millions	Flowering		500 mL	Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water.
Paddy's lucerne	Active growth	ACT, NSW only		Plants that have been continually slashed or grazed over many seasons may be difficult to control and regrowth may occur.

Woody weed situations

High volume spraying

Agricultural non-crop areas, commercial and industrial areas, forests, pastures and rights-of-way

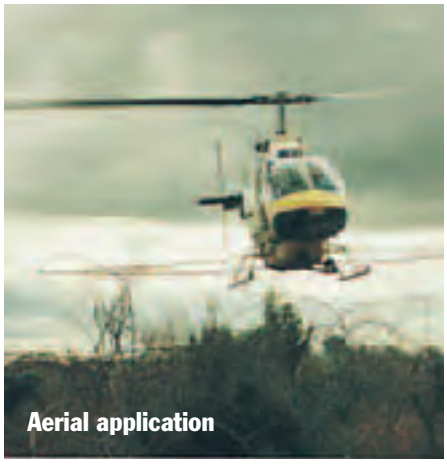
Weeds controlled	Weed growth stage	State	Rate/100 L water	Critical comments
Parkinsonia	Under 2 m tall	NT, Qld, WA only	350 mL	Add Uptake Spraying Oil @ 500 mL/100 L water. Avoid spraying under dry conditions when plants are stressed or bearing pods. Thoroughly wet foliage.
Paterson's curse	Flowering	All states	250 mL	
Prickly pear (common) Smooth tree pear	Active phyllode growth		500 mL	Apply as a thorough foliage spray. Regrowth may occur, so a follow-up application may be necessary.
Rubber vine (not infected with rust)	Up to 1.5 m tall at flowering	NT, Qld, WA only	350 mL	Spray all leaves and stems just to the point of run-off and thoroughly spray the base of the plant. With larger, more dense stands, regrowth may occur. Subsequent control of any regrowth should be done by basal bark spraying.
	Dense stands greater than 1.5 m tall at flowering		500 mL	
Siam weed	Active growth		350 mL	Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Sicklepod	Up to flowering		200 mL	DO NOT apply to podding plants. Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Spear thistle	Rosette to flowering	All states	150 mL	
St. John's wort	From flowering to early seed set		500 mL	Late spring to early summer.
Sweet briar	Up to 1.5 m tall		350 mL	Add metsulfuron-methyl at 10 g/100 L water to obtain more reliable results with the lower rate of Grazon Extra.
			500 mL	Full leaf to ripe fruit prior to leaf fall. Thorough wetting including the crown is recommended.
Tobacco weed	Actively growing plants	NT, Qld, WA only	300 mL	Add a 100% concentrate non-ionic surfactant (e.g. BS 1000) at 100 mL/100 L of water for best results.
Wattle (*Acacia* spp.) (except corkwood wattle)	1 to 3 m tall	All states	350 mL	
Wild rosemary (*Cassinia laevis*)	Active growth 0.5 to 1 m tall	NT, Qld only	350 to 500 mL	Use lower rate on seedlings 0.5 m tall. Apply as a thorough foliar spray.
Wild tobacco tree	Spring to autumn up to 2 m tall	ACT, NSW, NT, Qld only	350 mL	

Extra easy to apply.

Application in woody weed situations.

Weeds need to be actively growing for herbicides to have optimum effect. Delay treatment until all regrowth has had time to grow to approximately 1 metre in situations that have been bulldozed, slashed, burnt or ploughed, or areas having a previous chemical treatment.


High volume spraying


Aerial application


Boom application

High volume spraying

Thorough coverage of foliage to the point of run-off is essential; however, avoid excess spraying that is wasteful of chemical.

Hand gun

- Apply the recommended mix to give full coverage of leaves and stems through a No. 6 to 8 tip at 700 to 1500 kPa (400 to 500 kPa for St. John's wort).
- A spray volume of 3000 to 4000 L per infested hectare of 1 to 2 metre high blackberry (30 to 40 L/100 m) should be used.
- Use 2000 L of spray mixture/ha of galenia infestation (i.e. 20 L /100 m^2 infested area).

Knapsack

- Apply the recommended spray mix to give full coverage of leaves and stems. The final volume of application should be similar to hand gun, but only treat small, individual bushes to ensure complete penetration and coverage.
- A spray volume of 3 to 4 L/10 m^2 infested area should be used.
- A spray volume of 2 L/10 m^2 should be used for a galenia infestation.

Gas powered gun (splatter gun)

Apply 50 mL shots to obtain uniform coverage of 4 to 5 m^2 of surface area of bush. This relates to 20 droplets/cm^2 of leaf surface.

Aerial application

- Apply in 200 L of water/ha using an aircraft to apply 100 L per pass on a double overlap pattern using nozzle configurations to produce coarse to very coarse droplets as defined by ASAE S572.
- The potential for damage from drift can be greatly reduced by avoiding unsuitable spraying conditions and using spray pressure and nozzles to minimise the production of small droplets.
- DO NOT spray when wind exceeds 15 km/h and/or air temperature reaches 35°C.

Low volume high concentrate application techniques

Good control will be achieved, similar to high volume application, where bush size enables good coverage of entire bush. Use a marking agent, as recommended by the equipment manufacturers, to check spray coverage.

Boom application

Application in a minimum spray volume of 200 L/ha for galenia and St. John's wort and 600 L of water/ha for sicklepod. Flat fan nozzles are recommended, using pressure in the range of 200–300 kPa. Boom height must be set to ensure double overlap of nozzle patterns.

Extra flexible to use.

Compatibility and treatment timing.

To get the most from Grazon Extra ensure you use it with compatible products and time treatment to occur when it will maximise effectiveness. Always check the label and read all instructions before mixing and applying. Further information is available at www.dowagrosciences.com.au or by calling 1800 700 096.

Compatibility

Herbicides	Adjuvants[#]
Statesman* 720	Uptake* Spraying Oil
Dow AgroSciences 2,4-D Amine 625	BS 1000
Abound* 300	Pulse® Penetrant
Abound* 400	
Lantana 600	
Ripper* 480	
glyphosate	
metsulfuron-methyl	
Roundup® CT	
Starane* Advanced[†]	

[#] As per Directions for Use. [†] Registration pending.

Weeds need to be actively growing for herbicides to have optimum effect.

Treatment timing for Grazon Extra

Weed	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Blackberry	✖	✖	☼	☼	✓	✓	✓	☼	☼	✖	✖	✖
St. John's wort	✖	☼	✓	✓	☼	✖	✖	✖	✖	✖	✖	✖
Sweet briar	✖	☼	✓	✓	☼	✖	✖	✖	✖	✖	✖	✖
Gorse	☼	☼	✓	✓	✓	✓	☼	☼	☼	☼	☼	☼
Lantana/ associated weeds	✖	✖	✖	☼	☼	✓	✓	✓	☼	✖	✖	✖
Rubber vine	✖	✖	✖	✖	☼	✓	✓	✓	☼	✖	✖	✖
Eucalypt regrowth/ Wattle	✖	✖	☼	☼	✓	✓	✓	✓	☼	✖	✖	✖

Key	
✓	Best time to spray/treat
☼	Can spray/treat if conditions are suitable
✖	Do not spray/treat

Extra information.

Protect crops and native and other non-target plants.

It is important to take care when controlling infestations on the banks of watercourses in order to minimise any adverse environmental impact such as off-target damage to native plants and aquatic animals.

Dry soil conditions usually prolong the longevity of weed seeds because the fungi and bacteria that attack seeds need moisture to grow.

Protection of crops

- Crops susceptible to Grazon Extra include, but are not limited to: peas, lupins, lucerne, navy beans, peanuts, soybeans and other legumes, cotton, flowers, fruit, hops, ornamentals, shade trees and *Pinus* spp., potatoes, safflower, sugar beet, sunflowers, tobacco, tomatoes, vegetables and vines.
- Grazon Extra is damaging to susceptible crops during both growing and dormant periods. Grasses are normally unaffected and establish quickly after treatment.
- Picloram, one of the active constituents in this product, can remain active in the soil for extended periods depending on soil type and application rate, rainfall, temperature, humidity, soil moisture and soil organic matter.
- DO NOT apply under weather conditions, or use spraying equipment, that may cause spray to drift onto nearby susceptible plants/crops, cropping lands, pastures, waterways or native vegetation.
- DO NOT allow physical spray drift onto waterways, native vegetation and susceptible crops.
- DO NOT apply close to, or in areas containing, roots of desirable vegetation, where treated soil may be washed onto areas growing (or areas to be planted with) desirable plants.
- DO NOT apply on sites where surface water from heavy rain can be expected to run off to areas containing, or to be planted with, susceptible crops or plants. DO NOT move soil that may have been treated to areas where desirable plants are to be grown.

Protection of livestock

- Poisonous plants may become more palatable after spraying and stock should be kept away from these plants until they have died down.
- Many plants remain poisonous after death, and stock should not be allowed access as there is a likelihood that they may graze the dead material. Such material should be burnt if possible.

Withholding period

Pasture – cutting or grazing pastures for stock food: NOT REQUIRED WHEN USED AS DIRECTED.

Buying hay, topsoil or seed?

Get a vendor declaration of the weed status of fodder, hay, topsoil and seed prior to purchase. If you can't be sure your imported feed is weed free, set aside containment areas where you feed stock.

Protect livestock destined for export markets.

The grazing withholding period (0 days) only applies to stock slaughtered for the domestic market. Some export markets apply different standards. To meet these standards, ensure that in addition to complying with the grazing withholding period, the Export Slaughter Interval is observed before stock are sold or slaughtered.

Export Slaughter Interval (ESI) – three days

Livestock that has been grazed on or fed treated crops within 42 days of application should be placed on clean feed for three days prior to slaughter.

Export Grazing Interval (EGI) – 42 days

Livestock that has been grazing on treated crops or pasture should not be sold for export slaughter for 42 days (6 weeks) after application of the chemical product, unless the export slaughter interval has been observed.

Protection of wildlife, fish, crustaceans and environment

DO NOT contaminate streams, rivers or waterways with the chemical or used containers.

Safety directions

- Harmful if swallowed.
- Will irritate the eyes and skin. Avoid contact with eyes and skin.
- When preparing the spray, wear cotton overalls buttoned to the neck and wrists, a washable hat, elbow-length PVC gloves and a face shield or goggles.
- If the product is in eyes, wash it out immediately with water.
- Wash hands after use.
- After each day's use, wash gloves, 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.

Material Safety Data Sheet

Additional information is listed in the Material Safety Data Sheet for Grazon Extra Herbicide, which is available from Dow AgroSciences on request.

Call Customer Service Toll Free on 1800 700 096 or visit

www.dowagrosciences.com.au

Resistant weed warning

Grazon Extra Herbicide is a member of the pyridines group of herbicides. The product has the disrupters of plant cell growth mode of action. For weed resistance management, the product is a Group I herbicide.

Grazon* Extra Herbicide

Next generation, new molecule added.

Works better... works longer

Dow AgroSciences

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