

Sinmosa® 250 – Spray-topping in Pastures

Active Constituent : 250 g/L paraquat dichloride

What is Spray-topping in Pastures?

Spray-topping is a truly Australian innovation and has been practiced successfully in every state for more than three decades. It is not used on a large scale anywhere else on the globe.



Spray-topping of pastures involves the application of a low rate of Sinmosa®250 towards the end of the grass growing season when grasses set seed. The aim is not to kill the plant, but to sterilize the seeds.

This technique is possible because at that timing grasses are especially vulnerable to paraquat and glyphosate compared with other broadleaf pasture species.

The low product rate used for spray-topping with Sinmosa has limited effect on clover and medics. It is effective on most common grass weeds as well as on saffron thistle.

Compared to glyphosate, Sinmosa has a wider window of application. Sinmosa is safer on clover and medic seed-set than glyphosate and is less affected by plant stress caused by adverse growing conditions.

Using Sinmosa in spray-topping of pastures provides a different mode of action to glyphosate and is therefore a very cost effective resistance management tool (from as little as \$ 2.50/ha!).

The basic Sinmosa rate for spray-topping pastures is 400 ml/ha. A heavier rate of 800 ml/ha can be applied if head emergence is too staggered. This rate will effectively hay-freeze the paddock and preserve proteins inside the foliage.

Spray-topping with Sinmosa®

Proven Key Benefits

Weed Management

- Up to 90% reduction in viable grass weed seeds
- Resistance management tool (very cost effective)

Pasture Productivity

- Prolongs dominance of clover and medics in legume orientated pastures
- Increases flexibility to prolong pasture phase
- Improves feed value and enables higher stock productivity for longer
- Reduces risk of annual ryegrass toxicity
- Cleaner wool – less contamination with seeds and organic matter
- Reduced eye and skin damage to livestock

Crop Rotation Management

- Starting new crop with lower grass weed, seed bank, burden
- Less cereal root disease
- More nitrogen in the soil

A medium-term pasture phase is generally budgeted on a 3-5 year duration before re-sowing occurs or the paddock is rotated back into a crop phase. The initial sowing composition may have a high legume component, but without management, the balance will shift rapidly towards annual grasses.

If the paddock is going back into crop rotation these annual grasses will create problems

- High numbers of grass seeds in the seed bank
- Potential problems with cereal root diseases
- Loss of nitrogen (less nitrogen producing legumes and more weeds using up diminished resources)

During the pasture phase productivity losses can be plentiful, regardless if the pasture is part of a crop rotation or not. Grasses start to invade significantly from the second or third year onwards.

- Contamination of wool with seeds
- Eye and skin injuries to livestock
- Less feed value = lower stocking rates, less productivity
- Annual ryegrass toxicity (caused by gall forming nematodes, carrying a toxin producing bacterium into heads of annual ryegrass).



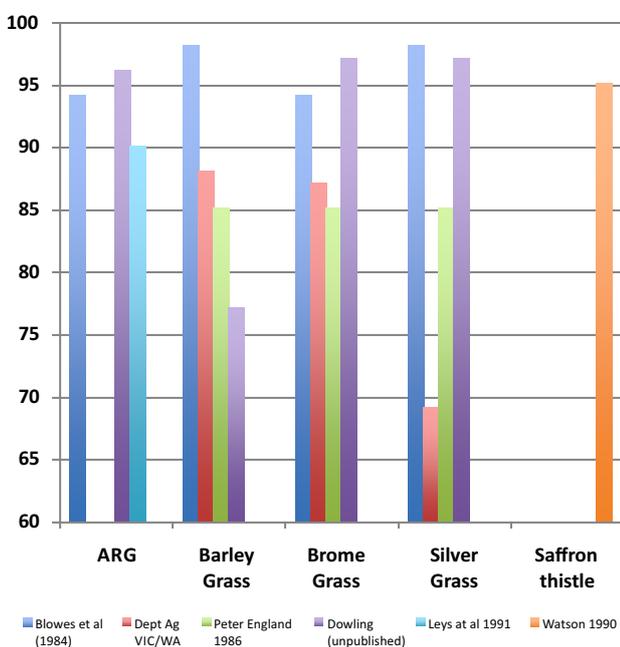
Timing

Timing is critical because sub-lethal rates of Sinmosa are used for spray-topping. Sinmosa is ideally applied at the milky dough stage. However, in reality a wide range of head stages will be present in the field and a compromise has to be the most likely outcome. Usually an application between end of flowering and hard dough stage is acceptable.

Weed control is a numbers game. It might be necessary to let some early or late heads escape, in order to target the vast majority. Heavy grazing 3 weeks prior to application will aid significantly in evening out head emergence.

Increasing the Sinmosa rate to 800ml/ha is another option to achieve more robust control. This rate will effectively hay-freeze the pasture. Proteins will be preserved and foliage will be more palatable to stock. Effect on legume seed-set will be increased. If the head emergence is too staggered, it will be advantageous to schedule two applications.

Figure 1.
Effect of spray-topping on percent seedling reduction (following winter season)



Barley Grass – barley grass generally flowers first amongst the grass species. Head emergence occurs for a prolonged period. Best timing for Sinmosa is before any of the heads have commenced haying off, but when the majority has already emerged (between flowering and hard dough stage).

Brome Grass – compared to barley grass, brome grass flowers later in the season. Spraying should commence just before the first seeds are starting to hay off and the majority have emerged from the boot.

Silver Grass – the seeds are small and assessment is difficult. Time from flowering to hard dough stage can be as short as a week. If silver grass is the problem weed it needs priority. Best timing is after flowering to just before haying off (hard dough).

Annual Ryegrass – best field timing is again when most seeds are between late flowering and dough stage.

Annual Ryegrass Toxicity – it is important to control heads as soon as possible, within 10 days of first head emergence. Heavy continuous grazing is important until the pasture has hayed off.

Saffron Thistle – the best timing is during early stem elongation prior to branching. The stem is generally 15 to 50 cm tall (adjust boom height!).

Testing for Growth Stages of Seeds

It is best to use seeds from the middle of the head for testing. Pull the seeds off and squeeze between thumbnails or fingers.

- **Watery ripe** – the seeds release sappy liquid (storage cells are formed).
- **Milk stage** – the seeds release white liquid (starch is being deposited). The thickness indicates **early, middle** and **late** milk stages.
- **Dough stage** – cloggy but still **soft** and like dough. There is a soft dough stage, changing to the **hard** dough stage when hardly any moisture is left in the seed. However, even at the hard dough stage, the seed will still compress when squeezed.
- **Ripening** – the seed hardly compresses when squeezed and colour is yellow/brown. Too late to get control.

(source, Peltzer&Newman 2009)

References

Pasture spray-topping

http://archive.agric.wa.gov.au/objtwr/imported_assets/content/w/weed/iwm/tactic%203.2.pdf

Blowes, W; S. Jones; P. England & P. Frazer (1984). Pasture topping using Roundup – a review. In Proceedings of the 7th Australian Weeds Conference 1: 351–354.

Douglas, A. & D. Ferris (2009) Spray-topping pastures. E-weed, newsletter of the Department of Agriculture and Food (WA) :Vol 10, No 7, 3-5

England, P. (1986). Pasture topping with Roundup herbicide. Proceedings of Conference on Recent Advances in Weed and Crop Residue Management. Southern Conservation Farming Group, Occasional Publication no. 2 : 104-105

Leys, A.R.; B. Cullis & B. Plater (1991) Effect of spraytopping applications of paraquat and glyphosate on the nutritive value and regeneration of *Vulpia bromoides* (L). Australian Journal of Agricultural Research 42 : 1405 – 1415.

Peltzer, S. & P. Newman (2009). Spray-topping. E-weed, newsletter of the Department of Agriculture and Food (WA) :Vol 10, No 7, 1-7

Watson, R. (1990). Saffron thistle and its control in grazing country. NSW Agriculture and Fisheries.

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Spray-topping with Sinmosa®

Pasture Management before Spray-topping

To optimize an even head emergence it is important to graze paddocks heavily during early spring growth. If stock numbers are low it is better to concentrate them on some selected paddocks. Little or not grazed paddocks can be spray-topped as well. However, because of more scattered seed head emergence, efficacy won't be as robust (consider the higher 800 ml/ha Sinmosa rate or two applications).

Timing and Rates

Timing is critical! Generally Sinmosa is best applied between the end of flowering and hard dough stage, ideally at the milky dough stage. However, extended periods of head emergence, especially if different species are involved, can make timing difficult. (see table below)

Application

Sinmosa requires good coverage of the seed heads! It can be applied in water volumes of 50-100 L/ha, however, using the higher end of the spectrum is more likely to give robust results. The calibrated ground rig should be raised 50 cm above the tallest seed heads to ensure a double overlap of nozzles.

The addition of a wetter 1000 product at 100 ml/100L will make the outcome more robust. This is especially recommended when the lower 400 ml/ha Sinmosa rate is used close to 100 L/ha of water.

Apply with a MEDIUM spray quality up to 85 L/ha. If desired, this can be relaxed to MEDIUM/COARSE above 85 L/ha spray volume.

The use of a double angled nozzle set-up could help to improve coverage on the back of seed heads.

Management after Application

Stock can be returned 1 day after treatment. Allow 7 days for horses.

Heavy grazing will assist in control because it will remove late tillers. Regrowth depends upon soil moisture and rainfall. Stock will prefer palatable regrowth, but if the new growth is too much, consider a second application.

Withholding Period: DO NOT graze or cut sprayed vegetation for stock food for at least 1 day, or graze horses for 7 days after application. Remove stock from treated areas 3 days before slaughter.

Spray-topping with Sinmosa – rate and timing, based on practical field situations

Situation	Weed	Sinmosa Rate	Optimum Timing	Range of Most Effective Timings
One dominant grass species (relatively even head emergence) heavy grazing	Annual Ryegrass Brome Grass Silver Grass Barley Grass	400 ml/ha	Milky dough	Late flowering – hard dough
	Saffron Thistle		Early stem elongation	
Mixed grass species Wide range of growth stages Lack of grazing	Annual Ryegrass Brome Grass Silver Grass Barley Grass	800 ml/ha or consider 2x400ml/ha	Milky dough	Majority of late heads have emerged, but advanced heads have not started to hay off yet



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