

Spring weed control

Techniques, products and methods to reclaim pasture from spring weeds

Introduction

The productive life of perennial pasture is to some extent dependent on limiting the negative effect of weeds as early as possible. Some weeds are linked to animal health issues and all weeds compete with productive pasture species for light, space, moisture and soil nutrients.

Spraying broadleaf weeds in late autumn or early winter with a phenoxy herbicide is a commonly accepted practise. However, there are several significant weeds that cannot be effectively controlled with an autumn / early winter spray because they emerge mainly in spring.

As soon as soil temperatures start to climb in early September these spring germinating weeds start to appear. A number of spring weeds have also become more evident in recent years, particularly in dairy pastures.

This guide covers three key areas of spring weed control:

- Spring weed control in established pasture
- Control of large spring weeds in pasture
- Californian thistle control

If you have a specific weed of concern or require more information contact a Nufarm representative on **0800 NUFARM (683 276)**.

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Spring weed control in established pasture

There are three key steps to effective spring weed control in established pasture - timing, weed identification and product selection.

1. Timing

One of the most common mistakes made with spring weed control is spraying too late. Just because the weeds aren't immediately obvious in the pasture doesn't mean they're not there.

Spring germinating weeds can be present under the pasture cover as seedlings and smaller plants. Following grazing, these seedling weeds are exposed to sunlight and are likely to develop in the pasture to the point where they will be severely production limiting.

If these weeds are left until they are mature and flowering, then in most cases it's too late. They will be very difficult, if not impossible to control.

The key is to time application to kill the bulk of the germination without letting early germinating weeds get too big for effective control. Changeable spring weather often results in delays in application. Identify paddocks where spring germinating weeds are present as early as possible, allowing plenty of time for application.



2. Weed Identification

The range of weed species identified in the paddock will determine the most effective treatment. See the following pages for some of the more common spring germinating weeds.



Fleabane

Prolific and fast growing, it prefers light soils and can withstand dry conditions. Fleabane produces a large number of seeds which can germinate in both spring and autumn. Spray at seedling to small rosette stage with Baton® 800WSG.



Buttercup

Most common in dairy pastures, particularly on less free draining soil types. Creeping and giant buttercup can be particularly invasive and are not easy to control. Preferred pasture spraying option is Valdo® 800WG plus Bonza® applied preflowering. May require two applications in the spring to ensure adequate control.



Dandelion

Dandelion is often a problem in many pastures. Effective control is only possible during the seedling stage because the plant is both deep rooted and perennial. Taproot re-growth is poorly controlled. In new pastures, spray Baton 800WSG early before the taproot becomes established. Note: once sprayed, dandelion plants can take several weeks to die.



Dock

While seedling docks can be controlled with Baton 800WSG, established docks will not be well controlled. Established docks are best controlled in early spring with either Dockstar® or Charter™. If other weeds need to be controlled as well as docks, a tank mix of Dockstar + Baton 800WSG can be used.



Fathen

Fathen is an extremely fast-growing weed with excellent survival mechanisms. In good conditions it can grow up to 1m high before flowering, but in dry situations it will flower and produce seed before it is 4cm high. It also has a very thick waxy layer which coats the leaves in dry weather. This is designed to hold moisture in the plant, but it is equally effective at preventing absorption of herbicides. Fathen can grow densely in spring-sown pastures. Baton 800WSG sprayed pre-flowering gives the most effective control.



Hedge Mustard

A tap-rooted annual, hedge mustard (often mistakenly called wireweed) can be a problem in newly-sown or open pastures. Seedlings form rosettes which in turn quickly produce upright flowering stems 1m or more high. Stock avoid this plant, leading to poor pasture utilisation. Control is best achieved with an early application of Baton 800WSG at seedling to rosette stage.



Nettles

Nettles are fast-growing, and can quickly choke out new grass and clover. Baton 800WSG applied at the seedling to small plant stage is a very effective method of control, usually performing much better than MCPA and MCPB herbicides. Higher rates of Baton 800WSG at larger growth stages will only suppress the plant, not kill it, so early application is best.



Oxeye Daisy

A perennial weed that becomes more prominent in spring. Often found in open pastures and on sidelings. A very difficult weed to control but where a tank mix of Baton 800WSG, Valdo 800WG and Bonza is used, more consistent levels of control are achieved.



Pennyroyal

Pennyroyal is now prevalent in many areas and different soil types and is becoming predominant in run out pastures. Invasive and highly unpalatable to stock, pennyroyal forms dense mats of vegetation in pastures, causing inefficient feed utilisation, and taints the milk of lactating dairy cows if they do eat it. Baton 800WSG sprayed pre-flowering gives the most effective control.



Ragwort

Ragwort is a very difficult weed to control and spreads easily. It grows all year round and is established from both seeds and old existing roots. Ragwort is a poisonous plant to stock and becomes more palatable when sprayed, so stock must be kept away until it has died down. When plants are small, boom spray with Baton 800WSG or Relay® Super S. Large rosettes or ragwort regrowth should be spot sprayed with Conquest®.

Storksbill



Storksbill is a low-growing, tap-rooted annual that thrives in low fertility pastures. It can cause problems in both new and established pastures, particularly in spring. Seedheads damage animal pelts. Storksbill has also been recorded as causing staggers and photo-sensitisation in lambs and cattle. Baton 800WSG is extremely effective at controlling storksbill up to the small rosette stage. More mature plants will only be suppressed. One well-timed spring application will also break the seed cycle and reduce the population in following seasons.

Wild turnip



Fast-growing and persistent, wild turnip is an annual brassica which is common in pastures on a wide range of soils. Flowering stalks can reach 1m high causing loss of pasture yield through competition for resources. Baton 800WSG will give effective control when applied early, up to rosette stage. Once the plant matures its root reserves make it harder to control.

Willow weed



Willow weed is a sprawling summer annual found in moist, well-aerated soils. Highly invasive, it can smother large areas of both newly-sown and established pastures. It is generally unpalatable to stock, but deaths have been recorded overseas. Willow weed produces a large volume of seeds which remain viable for some time, and it can also reproduce from small pieces of broken stem. Optimal control is achieved by spraying Baton 800WSG at seedling stage (less than 75mm high). Established plants are poorly controlled.

3. Herbicide Selection

Most common spring germinating weeds can be controlled with the use of Baton 800WSG, while some of the harder to kill weeds require the addition of Valdo® 800WG and Bonza.

Baton® 800WSG

Baton 800WSG is a phenoxy herbicide that can be very useful in spring. Baton 800WSG provides effective control of most common spring germinating weeds. Baton 800WSG is an advanced formulation, containing 800g/kg 2, 4-D as the dimethylamine salt. Formulated as a granule, Baton 800WSG is low odour, is non-volatile and causes less damage to valuable clovers. Baton 800WSG applied in spring will have some affect on clover growth, but clover normally recovers well and any suppression is more than balanced by the benefits of less weed competition.



For spring weeds Baton 800WSG is typically applied at 1.5 - 2kg/ha (see table page 11; always refer to the Baton 800WSG label before application). Recommended water rates are 100 - 300L/ha. Do not apply Baton 800WSG to paddocks shut for hay or silage, or to pastures containing chicory or plantain.

Valdo® 800WG

Valdo 800WG is a clover friendly herbicide that is ideal as a tank mix partner for Baton 800WSG when a wider weed spectrum is required. Valdo 800WG should always be applied in conjunction with Bonza® spraying oil for effective control. Valdo 800WG controls harder to kill weeds such as perennial buttercups, cresses and oxeye daisy. Be mindful of damage to young clover. NB: Refer to the Baton 800WSG label.



Rates of application vary between 30 and 65g/ha dependent on the targeted weed. Apply Valdo 800WG in 100 - 300L of water with Bonza at a rate of 500ml/100L of water. Valdo 800WG has a 14 day grazing withholding period. Susceptible crops such as brassicas, sunflowers, lupins and beans should not be planted until three months after the application of Valdo 800WG.

Bonza®

Bonza is a specially formulated blend of oils designed to enhance wetting, spreading and uptake of herbicides. Bonza also aids in the management of spray droplet quality and survival. Apply Bonza at a rate of 500ml - 1L per 100L of water, as per the relevant product label.



Pasture management for application

Graze paddocks before spraying to expose target weeds, and to reduce clover leaf area to minimise clover damage. Let the paddock freshen for 2 - 3 days. Try to spray as soon as possible thereafter (weather permitting). Wait 10 - 14 days (14 days if Valdo 800WG is applied) before the paddock is grazed again, to allow herbicides to move through the weed plants.

Three tips for spring weed control

- Start looking for spring weeds early (September)
- Identify the full range of weeds that need to be controlled
- Select the right product for the job.



Spring weed treatment and timing reference chart

WEED	Baton 800WSG 800WSG (kg/ha)	Valdo 800WG (g/ha)	STAGE
Annual buttercups	1 - 1.5	50 - 65	Apply before flowering. Baton 800WSG controls annual species only.
Canadian fleabane	1.5 - 2		Seedlings to small rosettes
Cresses	1.5 - 2	50 - 65	Seedlings to small rosettes. Creeping yellow cress is best controlled with a Baton 800WSG, Valdo 800WG and Bonza mix.
Dandelion	1 - 1.5		Seedlings
	1.5 - 2		Small rosettes
Dock	2 - 2.5		2 - 4 leaf seedlings only
Fathen	1 - 2		Apply before flowering
Giant buttercup		65	Apply before flowering
Hedge mustard	1 - 2	30 - 65	Seedlings to small rosettes
Nettles	1.5 - 2.5	30	Seedlings to young plants
Oxeye daisy		65	Apply to young seedlings. Suppression only. A Baton 800WSG, Valdo 800WG and Bonza mix will provide a more consistent level of control.
Pennyroyal	1.5 - 2		Prior to flower stalk development. High rate useful as a salvage treatment for flowering pennyroyal.
Ragwort	2 - 3		Seedlings to small rosettes
Storksbill	1.5 - 2		Seedlings
	2 - 3		Rosettes
Wild turnip	1.5		Seedlings only. Established plants are not well controlled.
Wild radish	1.5 - 2.5	30 - 65	Seedlings only. Established plants are not well controlled.
Willow weed	2 - 3	65	Seedlings. No taller than 75mm. NOTE: Willow weed is commonly mistaken for water pepper. Water pepper has lighter green leaves and no black markings. Baton 800WSG will not control water pepper.

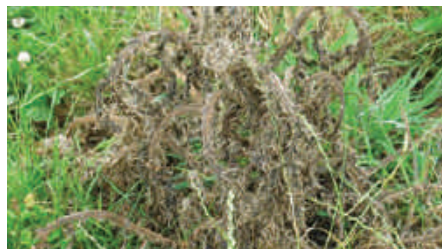
Controlling large spring weeds in pasture

A number of spring weeds have multiple germinations in a season. Early germinations of weeds may be too large for effective control with Baton 800WSG or Valdo 800WG. In this case Conquest is an ideal spot spraying solution. Conquest will not only control larger spring weeds in your pasture but also large thistles and ragwort plants. Conquest is also ideal for spot spraying any brushweeds that need attention.

Conquest does not damage grass but is very damaging to legumes. Target weeds carefully to avoid over spray.



Conquest-treated nodding thistle
13 days after application



Conquest-treated nodding thistle
48 days after application

Pasture weeds – spot application using Conquest

WEED	Knapsack or battery powered motorbike sprayer mL/10 Litres	High volume gun and hose mL/100 Litres	Notes
Ragwort and thistles (excluding Californian thistle)	60	200	Rosette and multi crowned plants
		250	Early flowering plants
Fennel, goats rue, hemlock, horehound, inkweed, nettles	60	250	Apply during active growth from full leaf to early flowering.
Alligator weed, field bindweed, Californian thistle, Cape weed, dock, sorrel	60	300	Californian thistle – retreatment may be required

Californian thistle control

Californian thistle is probably the most invasive broadleaf weed in New Zealand pastures with reports estimating \$700 million in lost pastoral farm revenue each year. This perennial thistle limits farm productivity by reducing both pasture production and pasture utilisation. Trials show that 30% ground cover with Californian thistle (13 stems/m²) can cut ewe liveweight gains by 29% over a 12-month period. Californian thistle also triggers scabby mouth disease.

Biology

In established pasture, seedlings rarely contribute to the spread of Californian thistle. Seeds will not germinate under vegetation and young seedlings are highly sensitive to shading.

Instead, Californian thistle reproduces from an extensive creeping horizontal root system. In spring, shoots develop from buds along the underground roots. The first shoots to develop prevent the adjacent live buds along the root from developing, and they then remain dormant. As a result, these first shoots grow strongly, supported by a large root system with minimal competition for nutrients and light. Their job is to supply nutrients to the root system during summer. They die in late autumn, but leave a new generation of over-wintering roots to continue the cycle the following spring.

This system allows Californian thistle to spread rapidly within paddocks. Distributing fragments of roots containing buds, either via livestock or cultivation, can also contribute to the weed's spread.



Controlling Californian thistles

Before planning to spray Californian thistle, please note these key points:

- Spread is almost entirely from roots.
- Roots only survive for about 12 months and are replaced annually.
- The amount of vegetation produced by the thistle shoots during a growing season (Sept - April) will determine the amount of root that over-winters.
- Over-wintering bud numbers are directly related to root mass (1 - 3 buds/gram of roots).

There is no “one-shot” magic bullet for effective control of Californian thistle. It can be killed in established pastures using selective herbicides, but to be successful these require multiple applications each year for at least 2 years.

To control established thistle populations in existing pastures, it is essential to reduce the numbers of over-wintering root buds in the soil. During the growing season (typically September to April) as much as possible of the above-ground thistle vegetation must be removed, for as long as possible, to reduce the plant’s ability to create new roots.

Renewal of old pastures using the Programmed Approach™ is particularly effective at controlling Californian thistle. This is a 12 - 15 month process involving three applications of CRUCIAL® (autumn, spring, autumn) with two intervening crops, typically a winter active ryegrass (annual or Italian) or cereal and a summer crop such as brassicas, cereals or maize. Californian thistle in the summer crop must be sprayed with a suitable herbicide e.g. Archer® 750 at 200-400 ml/ha.

Control strategies

The mow and spray option (A) is the preferred option. When mowing is not an option, a herbicide programme (B) will be the next best solution.

A) Mow and spray

- Mow when 20 - 30% of shoots reach the hardball stage (Nov).
- Boom spray re-growth in January with appropriate herbicide.
- Spray again in March to kill newly-emerged shoots.
- Repeat for the next 1 - 2 years until thistles are controlled.

Mowing shoots close to the ground stimulates growth of new shoots from dormant root buds, or from buds at the base of cut stems. By increasing the shoot to root ratio, and weakening the roots as they put more resources into generating shoots, the plant becomes more susceptible to herbicides.

B) Herbicide programme

- Apply appropriate herbicide via boom spray or weed wiper when thistle shoots are at the early flower bud stage (Dec-mid Jan).
- Apply herbicide again in March to kill newly-emerged shoots. Failure to apply this second treatment is the main reason for poor control of Californian thistle.
- Repeat for the next 1 - 2 years.

Boom spray herbicide options

Products	Use rate	Comments	Rainfastness
Baton 800WSG	1.5kg/ha	May cause minor clover suppression - clover recovers quickly	6hrs
Thistrol® Plus	4L/ha	Safe on clover	2hrs
Agritone® 750	2L/ha	Will suppress clover	2hrs

*Some alternative products are rainfast in 12 hrs. Baton 800WSG, Thistrol Plus and Agritone 750 give you much more application flexibility during spring weather conditions.

Situations that call for Thistrol Plus

- If you need extra clover safety.
- Paddocks shut up for hay or silage, or paddocks that have not been recently grazed.
- When showers are likely 2 hours after spraying (it's rainfast in just 2 hours).



For best results

- Graze before spraying to expose thistles and reduce clover leaf area to minimise clover damage.
- Do not apply Baton 800WSG or Agritone 750 to pastures shut for hay or silage.

Recommended water rates:

- Ground application – 100 - 300L water/ha (300L for dense thistle populations).
- Aerial application – minimum 60L water/ha.

Why Baton 800WSG is better on Californian thistle

- Half the cost of many alternative herbicides; more effective.
- Faster brownout and leaf drop.
- Stock can graze under thistles more quickly.
- Better quality pasture from reduced weed competition and improved grazing management.



Get Californian thistle control with the 2x2 Spray Plan

Trial results from Hinuera in the Waikato and Mid Canterbury have shown that spraying twice (December and March) with Baton 800WSG or Thistrol Plus for two consecutive thistle growing seasons greatly reduces thistles compared with a once a year spray programme. Refer to the tables below.

Why the 2x2 Spray Plan works

The biology of Californian thistles (as discussed on page 4) means that repeated treatment is needed to diminish thistle numbers. Table 1 shows that in the first year of treatment one spray reduced thistle numbers by 36% and two sprays by 73%. Whereas, Table 2 shows that two sprays the following growing season reduced thistle numbers by 93%. In summary, two sprays for two growing seasons is one of the most effective methods for controlling Californian thistles.

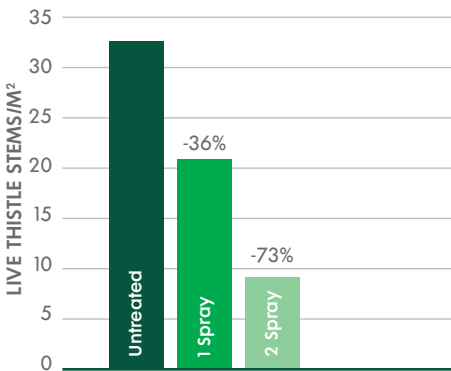


Table 1: Thistle numbers in the spring following treatment the previous year.

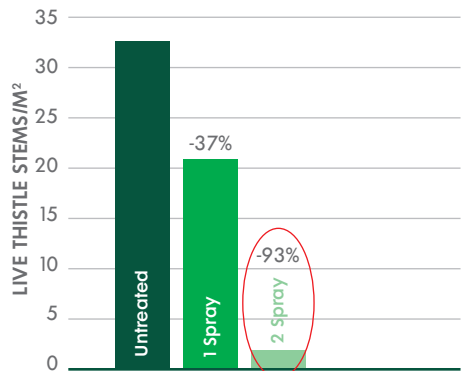


Table 2: Thistle numbers in the spring following treatment the previous 2 growing seasons.



What farmers are saying

“In some paddocks the Californians were up to the window of the truck and higher. Where we’ve sprayed twice over two growing seasons, the Cali’s are wiped out!”

Brian Dickison - Waikaka

“When we came here four years ago, the Californian thistles were so thick you couldn’t get into some paddocks with a motorbike. Now we’ve got those hectares back.” **John Gilkison - Southland**

The most expensive control measure for Californian thistles is doing nothing!

Weed wiper herbicide option

PRODUCTS	Use rate
Archer 750	1:100 dilution (100ml/10L)
CRUCIAL	1:30 dilution (333ml/10L water)
Associate® 600WDG	1:1000 dilution (10g/10L water)

For dense infestations, a second pass with the wiper in the opposite direction will improve control.



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Photos of Fathen and Hedge Mustard are courtesy of Trevor James.

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