

Weed control

Herbicides should be regarded as part of an integrated weed control strategy within the cropping rotation as it is generally easier, more effective and cheaper to use selective herbicides to remove grassy weeds in broadleaved crops and broadleaved weeds in cereal crops.

Pulses grown in rotation with cereal crops offer farmers opportunities to easily control grassy weeds with selective herbicides that cannot be used in the cereal years. An effective kill of grassy weeds in the pulse crop will reduce root disease carry over and provide a “break crop” benefit in the following cereal crop. Grass control herbicides are now available which will control most grassy weeds in pulses. Volunteer cereals can also be controlled with some of these herbicides. Simazine alone and in mixtures with trifluralin in lupins and beans can be used to control some other grasses (such as silver grass) that are not readily controlled by the specific grass herbicides.

In general, options for broadleaved weed control with selective herbicides in pulse crops are limited, compared to the treatments available for use in cereal crops.

A weed management program should be designed to make the most opportunities to use selective herbicides in each crop in the rotation to reduce the weed problem in the following crop. Great care should be taken in planning a cropping rotation to avoid growing a crop which may become a “weed”, which cannot be controlled with selective herbicides, in the subsequent crop.

The following spray-rate charts present the herbicide suggestions of Primary Industries and Resources South Australia. Some products are either not registered for the crop indicated or for the full list of weeds indicated. Seek further advice for your situation. These rates or uses have been derived from limited trials.

HERBICIDE DAMAGE IN PULSE CROPS

Pulse crops can be severely damaged by some herbicides whether as residues in soil, contaminants in spray equipment, spray drift onto the crop or by incorrect use of the herbicide. (See Plates 30-37)

Activity in soil and leaching

Some soil active herbicides used for weed control in pulses can damage crops where conditions favour greater activity and leaching.

Herbicides move more readily in soils with

- low organic matter
- more sand, silt or gravel.

Herbicide movement is much less in soils with higher organic matter and higher clay contents. Damage from leaching is also greater where herbicides are applied to dry, cloddy soils than to soils which have been rolled and which are moist on top from recent rainfall.

The relative leaching of some soil active herbicides (where 1 = the least leaching):

Chemical	Example of product	Leaching index
pendimethalin	Stomp®	1
trifluralin	Treflan®	1
diuron	Diuron	2
simazine	Simazine	5
metolachlor	Dual®	6
atrazine	Atrazine	10
metribuzin	Lexone®, Sencor®	14

That is, metribuzin leaches at almost 3 times the rate of simazine and 7 times the rate of diuron.

The relative tolerance of the crop type and variety will also affect crop damage from these herbicides. For example, lupins are more tolerant to simazine than are the other pulses. For more specific details on soil active herbicides and the risk of crop damage in your cropping situation seek advice from an experienced agronomist.

Residues in Soil

Picloram (e.g. Tordon® 75-D) residues from spot-spraying can stunt any pulse crop grown in that area. This damage is especially marked in faba beans where plants are twisted and leaves are shrunk (See Plate 33). In more severe cases bare areas are left in the crop where this herbicide has been used - in some cases more than five years ago. Although this damage is usually over a small area, correct identification of the problem avoids confusion and concern that it may be some other problem such as disease (See Plate 34).

Residues of sulfonylurea herbicides can persist in some soils. These residues can last for several years, especially in more alkaline soils and where there is little summer rainfall. The pulses emerge and grow normally for a few weeks and then start to show signs of stress. Leaves become off-colour, roots may be clubbed, plants stop growing and eventually die. Lentils are one of the most sensitive pulses to chlorsulfuron residues in soil and faba beans are one of the least sensitive. Beans and vetches are more sensitive than other pulses to Logran® than to Glean® residues. Refer to the labels for recommendations on plant-back periods for pulses following use of any herbicides.

Contamination of Spray Equipment

Traces of sulfonylurea herbicides (such as chlorsulfuron, metsulfuron or triasulfuron) in spray equipment can cause severe damage to legumes when activated by some of the grass control herbicides (See Plate 35). Always clean spray tanks and lines with chlorine, according to recommendations, after using sulfonylurea herbicides and before using these grass control herbicides.

Traces of Affinity® can also damage pulse crops. Decontaminate with alkali detergent.

Spray Drift

Pulse crops can be severely damaged by some hormone herbicide sprays, such as 2,4-D ester, drifting into the crop (See Plate 37). This can happen when these sprays are applied nearby in very windy or still conditions, especially where there is an inversion layer of air on a cool morning.

When using these herbicides spray when there is some wind - to mix the spray with the crop. Do not use excessively high spray pressure as this will produce too fine a spray, which is more likely to drift onto a neighboring pulse crop.

Using sheep to selectively graze weeds in pulse crops

Plants vary in their palatability and that under the ‘right’ stocking rate, animals will selectively graze the more palatable plants. This knowledge is useful when previously grown crops volunteer in the sown crop and herbicides are not available or their use would damage the crop. For example, graze peas in a chickpea crop.

The relative palatability for some crops has been determined by the University of Adelaide and are shown in Table 5 : A. The palatability was rated as highly palatable - most of the crop eaten; low palatability - very little of the crop eaten.

For best results;

- introduce sheep early, before crop canopy closes
- use older sheep
- use low stocking rates
- spray weeds along fence line to concentrate sheep in crop
- remove sheep before they do much damage to crop
- remove sheep before flowering.

Observe grazing withholding periods if any chemicals are used in crop.

TABLE 5 : A
Relative Palatability of Various Crops to Sheep.

Highly palatable	Moderately palatable	Low palatability
<i>9 weeks after sowing</i>		
field peas, lathyrus, fenugreek, lentils, canola, wheat, safflower, lupin, Blanchefleur and Languedoc vetch.	chickpeas	coriander, faba bean, narbon bean
<i>13 weeks after sowing</i>		
field peas, lathyrus, canola	lentils, lupins, mustard, safflower	chickpeas, coriander, faba beans, narbon bean, fenugreek.



HERBICIDE RESISTANCE

- a challenge to be met

Heavy reliance on the very effective grass and/or broadleaf herbicides since the 1980's has seen the development of herbicide resistance across southern Australia in a range of cropping weeds, including annual ryegrass, wild oats, Indian hedge mustard, wild radish, wild turnip and prickly lettuce as well as barley grass and capeweed.

Herbicide resistance is a major threat to southern Australian grain growers, but whilst herbicide resistance is here to stay, it need not spell the end of profitable cropping. Delaying the onset and/or reducing the impact of herbicide resistant weed populations calls for the implementation of a wide range of weed control strategies, that will in turn help sustain profitable grain production.

The threat of herbicide resistance does not mean that herbicides should not be used, however, it does mean farmers should avoid over reliance on herbicides that have the same action on plants ("mode of action"). All herbicide labels now indicate what herbicide group the active ingredient belongs to. The following table lists herbicides according to their "mode of action" group and indicates whether the risk of resistant populations developing is high, moderate or low.

Recent cases of glyphosate resistance in annual ryegrass and of paraquat resistance in barley grass in direct-drill cropping systems sounds a warning on heavy reliance on even "low risk" herbicides.

Growers should aim to use as many different methods of weed control as practical in the overall paddock management including the following:

- rotation of herbicide groups
- use of knockdown herbicides for seedbed preparation
- burning
- delayed seeding
- crop-topping
- cultivation
- crop competition
- pasture topping
- hay making
- grazing
- seed capture at harvest
- wick wiping (short crops)

Care must be taken when introducing control methods into the overall paddock plan. For example weed numbers, especially resistant populations, can increase dramatically under pulses due to the poor competition offered by these crops. Ryegrass surviving selective herbicides used in pulses can be controlled by crop-topping with desiccant herbicide. (See Page 5 : 4)

Monitoring of weed populations before and after spraying is an important management tool.

Field testing and/or seed testing can provide a guide to the resistance status of weed populations.

Herbicide Groups*

HIGH RISK

Group A

Fops: diclofop (various e.g. Hoegrass[®], Pantera[®], Nugrass[®]), Fusilade[®], Verdict[®], Targa[®], Tristar Advance[®], Correct[®], Topik[®]. **Dims:** Sertin[®], Aramo[®], Achieve[®], Factor[®], Select[®]. **Fop + Dim:** Fusion[®], Motsa[®]

Group B

chlorsulfuron (various e.g. Glean[®], Siege[®]), metsulfuron (various e.g. Ally[®], Associate[®]), triasulfuron (various e.g. Logran[®], Nugran[®]), Londax[®], Spinnaker[®], Broadstrike[®], Eclipse[®], Hussar[®], Flame[®], Arsenal[®], On Duty[®], Monza[®], Harmony[®], Raptor[®], Midas[®], Atlantis[®], Intervix[®], Torpedo[®]

MODERATE RISK

Group C

simazine, atrazine, Bladex[®], terbutryn, metribuzin (e.g. Lexone[®], Sencor[®]), diuron, linuron, bromoxynil, Jaguar[®], Tough[®], Totril[®]

Group D

trifluralin (various), Stomp[®], Yield[®], Surflan[®], propyzamide (e.g. Edge[®], Kerb[®])

Group E

chlorpropham

Group F

Brodal[®], Tigrex[®], Jaguar[®], Sniper[®]

Group G

Goal[®], Spark[™], Ronstar[®], Affinity[®]

Group H

Balance[®]

LOW RISK

Group I

2,4-D, MCPA, 2,4-DB, dicamba, Tordon[®], Lontrel[®], Starane[®], Garlon[®]

Group J

Dalapon, Avadex[®]extra, Eptam[®], Saturn[®]

Group K

Dual[®], Kerb[®]

Group L

Reglone[®], paraquat (various e.g. Gramoxone[®], Nuquat[®], Shirquat[®], Spraytop[®]) SpraySeed[®]

Group M

glyphosate (various e.g. Roundup CT[®], Touchdown[®], WipeOut[®])

Group N

Basta[®]

Group Q

amitrole

Group Z

Mataven[®]

* List of commonly used active ingredients and products only. Inclusion of an active or product does not imply that it is registered in all States. Check label for registered uses.

TABLE 5 : B

Crop-topping to reduce the seed set of annual ryegrass

	Paraquat (eg Gramoxone, Nuquat, Shirquat)		Roundup® Power Max
Crops registered or with permit	chickpeas faba beans lentils lupins peas vetch		faba beans peas
Active ingredient	250g/L	200g/L	540g/L glyphosate
Rate/ha	400-800ml	0.5-1L	320-680ml
Withholding period			
Harvest	14 days		7 days
Grazing	1 day (7 days for horses)		7 days

Notes

Paraquat

Spray when all ryegrass heads have emerged and most are at or just past flowering and before haying off.

Optimum timing for ryegrass control is approx. 10 days after flowering. Spray when as many pods as possible have fully developed seeds although pods may still be green. Germination of pulse seed sprayed at the full pod stage is not reduced. Seeds less than full size will **not** develop further after spraying and may have a reduced germination.

Reduction in crop yield of more than 25% can occur if seed in pods is not at full size.

The higher rate of paraquat can give more reliable control of ryegrass, but can cause a greater yield loss.

Roundup® Power Max

Optimum timing of ryegrass control is at flowering of ryegrass. Use higher rate if ryegrass is at milky dough stage. Apply when lower pods of beans are turning black or when lower pods of peas are turning yellow.

Seed germination can be abnormal, so do not keep treated seed for sowing or sprouting.
(See Page 9 : 6)

TABLE 5 : C

Desiccating to reduce weed seed set and to improve harvesting

	Reglone®	Roundup® Power Max	Roundup® Power Max & Ally®
Crops registered or with permit	chickpeas faba beans lentils lupins peas	chickpeas	chickpeas
Active ingredient	200g/L diquat	540g/L glyphosate	540g/L glyphosate and 600g/kg metsulfuron methyl
Rate/ha	2 to 3L	1.8L	0.5 to 1.0L of Roundup® Power Max and 5g of Ally®
Withholding period			
Harvest	2 days lentils chickpeas, faba beans nil peas & lupins	7 days	7 days
Grazing	1 day	7days	7 days

Notes

Use the higher rate for thicker crops or weeds.

Add wetting agent to Reglone® - use BS1000 at 0.16%.

Seed harvested from crops treated with Roundup® Power Max can have abnormal seed germination.

Crop stages for desiccation

Chickpeas - when less than 20% of pods are green and 90% of seed is changing from a green color.

Faba beans - when seed from the top of the plant has a black scar and the lower 25% of pods are black.

Lentils - when seed in top pods is turning from yellow to orange and seed is firm. Tips of pods and upper pods may still be green.

Lupins - when seed in top pods is turning yellow and very few leaves remain.

Peas - when seed is firm and the lower 75% of pods are brown and leathery.

(See Page 9 : 6)

Getting the best results from herbicides

1. Control weeds as early as possible in the first 6 weeks after sowing.
2. Make sure that the crop and weeds are at the correct growth stage for the herbicide to be used.
3. Do not spray outside the recommended crop growth stages as damage may result.
4. Do not spray when the crop or weeds are under any form of stress such as drought, water logging, extreme cold, low soil fertility, disease or insect attack, or a previous herbicide.
5. Some herbicides should not be used when weeds are wet with rain or dew or if rain is likely to occur within three or four hours. (See Page 5 : 18).
6. Do not spray in windy conditions (over 10 - 15km/hour) as drift from herbicides can cause damage to non target crops. Herbicide spray can also drift in very calm conditions, especially with air temperature inversions.
7. Use sufficient water to ensure a thorough, uniform coverage regardless of the method of application.
8. Use good quality water. Hard, alkaline or dirty water can reduce the effectiveness of some herbicides.
9. Maintain clean, well cared for equipment. A poorly maintained spray unit will cost you money in breakdowns, blocked jets, poor results and perhaps worse, crop damage through misapplication.
10. After products such as Atlantis[®], chlorsulfuron, Hussar[®] metsulfuron or triasulfuron have been used in equipment, it is **essential** to clean that equipment thoroughly with chlorine before using other chemicals. After using Affinity[®], Broadstrike[®] or Eclipse[®] decontaminate with liquid alkali detergent.
11. Seek advice before spraying recently released pulse varieties. They may differ in their tolerance to herbicides.

ALWAYS READ THE LABEL BEFORE USING ANY CHEMICAL

WEED NAMES

Broadleaf Weeds

Bifora *Bifora testiculata*
 Bedstraw *Galium tricornutum*
 Capeweed *Arctotheca calendula*
 Charlock *Sinapis arvensis*
 Deadnettle *Lamium amplexicaule*
 Dock *Rumex spp.*
 Fumitory - common *Fumaria officinalis*
 Fumitory - red *Fumaria densiflora*
 Fumitory - white *Fumaria parviflora*
 Geranium *Erodium spp.*
 Hoary cress *Cardaria draba*
 Horehound - *Marrubium vulgare*
 Ice-plant - common *Gasoul crystallinum*
 Lettuce - prickly *Lactuca serriola*
 Medic *Medicago spp.*
 Muskweed *Myagrurn perfoliatum*
 Mustard - ball *Neslia paniculata*
 Mustard - Indian hedge *Sisymbrium orientale*
 Poppy - rough *Papaver hybridum*
 Radish *Raphanus raphanistrum*
 Sheep weed, white ironweed *Buglossoides arvensis*
 Shepherd's purse *Capsella bursa-pastoris*
 Sorrel *Rumex acetosella*
 Soursob *Oxalis pes-caprae*
 Speedwell - ivy leaf *Veronica hederifolia*
 Tares *Vicia spp.*
 Three corner jack, spiny emex *Emex spp.*
 Toadrush *Juncus bufonius*
 Turnip - long fruited *Brassica tournefortii*
 Turnip - short fruited *Rapistrum rugosum*
 Ward's weed *Carrichtera annua*
 Wireweed *Polygonum spp.*
 Yellow Burr weed *Amsinkia spp.*

Grasses

Barley grass *Hordeum spp.*
 Brome grass *Bromus spp.*
 Phalaris *Phalaris minor, Phalaris paradoxa*
 Ryegrass annual *Lolium rigidum*
 Sand fescue *Vulpia fasciculata*
 Silver grasses *Vulpia bromoides, Vulpia myuros*
 Wild oats *Avena fatua*

Charts have been compiled from PIRSA Spraying Charts and in consultation with chemical companies.

Chickpeas

Suggested Rate of Product/ha 2008

	Spinnaker® 700WDG (g/ha)	Avadex® Xtra (l/ha)	Rifle® - Stomp® (l/ha)	Trifluralin 480 (l/ha)	Balance® (g/ha)	Diuron granules (g/ha)	Lexone® DF (g/ha)	Senco® 480 SC (ml/ha)	Broadstrike® (g/ha)	Pantera® (ml/ha)
Timing	Post S	Pre S	Pre S	Pre S	Post S-	Post S-	Post S-	Post S-	4-6	Pre
Crop	Pre E	S	S	S	Pre E	Pre E	Pre E	Pre E	leaf	pod
Weeds	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	up to 5cm	3 leaf to ET
Broad Leaf Weeds										
Bedstraw	•	-	-	C	-	-	-	-	25	-
Bifora	•	-	-	-	-	-	-	-	SG	-
Cape Weed	-	-	-	-	100	275-550	180-380	280-580	SG	-
Charlock	•	-	-	-	-	830	180-380	280-580	25	-
Deadnettle	45H	-	-	S	S	830	180-380	280-580	-	-
Dock - Seedlings	-	-	-	-	-	-	180-380	280-580	-	-
Fumitory - Red & White	-	-	SG	1.25	-	-	180-380	280-580	-	-
Fumitory - Common	-	-	•	-	-	-	180-380	280-580	-	-
Geranium	•	-	-	-	-	275-550	-	-	SG	-
Hoary cress	-	-	-	-	-	-	-	-	SG	-
Horehound Seedlings	-	-	-	-	-	-	180-380	280-580	-	-
Ice-plant	-	-	-	-	-	830	•	•	25G	-
Lettuce-Prickly	-	-	-	-	100	S	•	•	-	-
Medics	-	-	-	-	100	-	C	C	-	-
Muskweed	45HG	-	-	-	-	-	-	-	SG	-
Mustard - Ball	•	-	-	-	-	•	180-380	280-580	25	-
Mustard - Indian Hedge	45H	-	-	-	100	830	180-380	280-580	25	-
Poppy - Rough	-	-	-	1.25	-	830	180-380	280-580	-	-
Radish	45H	-	-	-	100	C	180-380	280-580	25S	-
Sheepweed	45H	-	-	SG	-	S	180-380	280-580	-	-
Shepherd's Purse	•	-	-	-	-	-	180-380	280-580	25	-
Sorrel - Seedlings	-	-	-	-	-	-	180-380	280-580	SG	-
Soursobs	-	-	-	-	-	S	-	-	-	-
Speedwell	•	-	-	S	-	-	180-380	280-580	-	-
Tares	-	-	-	-	-	-	C	C	SG	-
Three Corner Jack	•	-	-	-	H	275-550	180-380	280-580	SG	-
Toadrush	•	-	-	-	-	275-550	180-380	280-580	-	-
Turnip Weeds	•	-	-	-	100	830	180-380	280-580	25	-
Ward's Weed	•	-	-	-	-	•	•	•	25	-
Wire Weed	45H	-	2.0	1.25	H	-	180-380	280-580	-	-
Yellow Burr Weed	•	-	-	S	-	-	180-380	280-580	25	-
Grasses										
Barley Grass	-	-	SG	1.25	-	-	C	C	-	250
Brome Grass	-	-	SG	S	-	-	-	-	-	300-375
Phalaris	-	-	-	1.25	-	-	-	-	-	-
Cereals - Barley	-	-	-	-	-	-	-	-	-	250
- Oats	-	-	-	S	-	-	-	-	-	250G
- Wheat	-	-	-	-	-	-	-	-	-	250
Ryegrass - Annual	-	-	2.0	1.25	-	S	-	-	-	300-375
Sand Fescue	-	-	2.0 S	1.25	-	-	-	-	-	-
Silver Grasses	-	-	2.0 S	S	H	-	-	-	-	-
Wild Oats	-	1.6	C	C	-	-	-	-	-	125 or 250
Registration in S.A.	R	R	R	R	R	NR	R	R	R	R

For more details on herbicide treatments see page 5 : 18

Consult supplier or Department of Primary Industries for more information.

Product marked 'NR' are not registered for chickpeas, but trials indicate potential use in chickpeas.

Chickpeas

Suggested Rate of Product/ha 2008

	Fusion® Super (g/ha)	Factor® WG (g/ha)	Sertin® 186 EC (l/ha)	Verdict® 520 (ml/ha)	Asset® (ml/ha)	Leopard®, Tzar®, Targa®, Eilantra® (ml/ha)	Targa® Bolt, Tzar® Bolt (ml/ha)	Select®, Sequence®, Status® (ml/ha)	Correct® (ml/ha)	Fusilade® Forte (ml/ha)	Aramo® (ml/ha)
Timing											
Crop	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F
Weeds	2 Leaf to ET	2 leaf to ET	2-6 leaf	2-5 leaf	2-5 leaf	3-5 leaf	3-5 leaf	2 leaf-FT	3-5 leaf	2 leaf to ET	2 leaf to T
Broad Leaf Weeds											
Bedstraw	-	-	-	-	-	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-	-	-	-
Cape Weed	-	-	-	-	-	-	-	-	-	-	-
Charlock	-	-	-	-	-	-	-	-	-	-	-
Deadnettle	-	-	-	-	-	-	-	-	-	-	-
Dock - Seedlings	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Red & White	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Common	-	-	-	-	-	-	-	-	-	-	-
Geranium	-	-	-	50-100	-	-	-	-	-	-	-
Hoary cress	-	-	-	-	-	-	-	-	-	-	-
Horehound Seedlings	-	-	-	-	-	-	-	-	-	-	-
Ice-plant	-	-	-	-	-	-	-	-	-	-	-
Lettuce-Prickly	-	-	-	-	-	-	-	-	-	-	-
Medics	-	-	-	-	-	-	-	-	-	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-	-
Mustard - Ball	-	-	-	-	-	-	-	-	-	-	-
Mustard - Indian Hedge	-	-	-	-	-	-	-	-	-	-	-
Poppy - Rough	-	-	-	-	-	-	-	-	-	-	-
Radish	-	-	-	-	-	-	-	-	-	-	-
Sheepweed	-	-	-	-	-	-	-	-	-	-	-
Shepherd's Purse	-	-	-	-	-	-	-	-	-	-	-
Sorrel - Seedlings	-	-	-	-	-	-	-	-	-	-	-
Soursobs	-	-	-	-	-	-	-	-	-	-	-
Speedwell	-	-	-	-	-	-	-	-	-	-	-
Tares	-	-	-	-	-	-	-	-	-	-	-
Three Corner Jack	-	-	-	-	-	-	-	-	-	-	-
Toadrush	-	-	-	-	-	-	-	-	-	-	-
Turnip Weeds	-	-	-	-	-	-	-	-	-	-	-
Ward's Weed	-	-	-	-	-	-	-	-	-	-	-
Wire Weed	-	-	-	-	-	-	-	-	-	-	-
Yellow Burr Weed	-	-	-	-	-	-	-	-	-	-	-
Grasses											
Barley Grass	230-320	80-180	H	50-100	200-400	250	125	175-500	200	410-820	175-250
Brome Grass	285-320	H	H	50-100	200-400	300-375	150-190	175-500	300	410-820	175-250
Phalaris	230-320	H	0.5-1.0	50-100	200-400	S	S	150-500	-	410-820	175-250
Cereals - Barley	230-320	H	H	50-100	200-400	250	125	500	200	410-820	175-250
- Oats	230-320	H	1.0	50-100	200-400	250G	125G	200-500	200	410-820	175-250
- Wheat	230-320	H	1.0	50-100	200-400	250	125	200-500	200	410-820	175-250
Ryegrass - Annual	230-320	80-180	0.5-1.0	75-100	300-400	300-375	150-190	150-500	450	410-820	175-300
Sand Fescue	-	-	-	-	-	-	-	-	-	-	-
Silver Grasses	-	-	-	-	-	-	-	250-500S	-	-	-
Wild Oats	230-320	80-180	0.75-1.0	37-75	150-300	125-250	65-125	175-500	250	410-820	175-250
Registration in S.A.	R	R	R	R	R	R	R	R	R	R	R

Code: - Not Effective • Insufficient Information C Some control under certain conditions G Not registered. This use has been derived from limited trials. S Suppression only. H See label for mix with another product

Key to Abbreviations: Pre S pre sowing Pre E pre emergence Post S post sowing Post E post emergence ET early tillering Pre F pre flowering T tillering FT fully tillered

Faba beans

Suggested Rate of Product/ha 2008

	Avadex® Xtra (l/ha)	Simazine granules (g/ha)	Rifle®, Stomp® (l/ha)	Trifluralin 480 (ml/ha)	Diuron granules (g/ha)	Lexone® DF (g/ha)	Senco® 480 SC (ml/ha)	Spinnaker® 700WDG (g/ha)	Raptor® (g/ha)	Pantera® (ml/ha)
Timing										
Crop	Pre S	Pre S or Pre E	Pre S	Pre S	Post S Pre E	Post S Pre E	Post S Pre E	Pre E	3-6 node	Pre pod
Weeds	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E		3 leaf to ET
Broad Leaf Weeds										
Bedstraw	-	-	-	C	-	-	-	70-100S	45S	-
Bifora	-	-	-	-	-	-	-	70-100S	-	-
Cape Weed	-	1-1.4	-	-	275-550	180-380	280-580	-	-	-
Charlock	-	•	-	-	830	180-380	280-580	70G	45G	-
Deadnettle	-	S	-	S	830	180-380	280-580	70S	45	-
Dock - Seedling	-	-	-	-	-	180-380	280-580	-	-	-
Fumitory - Red & White	-	1-1.4	SG	800	-	180-380	280-580	-	-	-
Fumitory - Common	-	1-1.4	•	-	-	180-380	280-580	-	-	-
Geranium	-	1-1.4	-	-	275-550	-	-	70	45	-
Hoary cress	-	-	-	-	-	-	-	-	-	-
Horehound Seedlings	-	S	-	-	-	180-380	280-580	-	-	-
Ice-plant	-	S	-	-	830	•	•	-	-	-
Lettuce - Prickly	-	-	-	-	S	•	•	-	-	-
Medics	-	S	-	-	-	C	C	-	-	-
Muskweed	-	-	-	-	-	-	-	70G	45SG	-
Mustard Ball	-	S	-	-	•	180-380	280-580	70G	45G	-
Mustard - Indian Hedge	-	1-1.4	-	-	830	180-380	280-580	70	45	-
Poppy - Rough	-	-	-	800G	830	180-380	280-580	-	-	-
Radish	-	S	-	-	C	180-380	280-580	70-100S	45S	-
Sheepweed	-	1-1.4	-	S	S	180-380	280-580	70SG	45SG	-
Shepherd's Purse	-	1-1.4	-	-	-	180-380	280-580	70	45S	-
Sorrel - Seedlings	-	-	-	-	-	180-380	280-580	100SG	•	-
Soursobs	-	S	-	-	S	-	-	100SG	•	-
Speedwell	-	1-1.4	-	S	-	180-380	280-580	70-100S	45G	-
Tares	-	-	-	-	-	C	C	-	-	-
Three Corner Jack	-	S	-	S	275-550	180-380	280-580	70S	45S	-
Toadrush	-	1-1.4	-	-	275-550	180-380	280-580	70	45SG	-
Turnip Weeds	-	1-1.4	-	-	830	180-380	280-580	70G	45	-
Ward's Weed	-	1-1.4	-	-	•	•	•	•	•	-
Wire Weed	-	1-1.4	2.0	800	-	180-380	280-580	70S	45S	-
Yellow Burr Weed	-	S	-	SG	-	180-380	280-580	70-100S	•	-
Grasses										
Barley Grass	-	1-1.4	SG	-	-	C	C	100S*	45	250
Brome Grass	-	S	SG	-	-	-	-	100SG*	45	300-375
Phalaris	-	-	-	•	-	-	-	100SG*	-	-
Cereals - Barley	-	C	-	-	-	-	-	100SG*	45	250
- Oats	-	C	-	S	-	-	-	100SG*	45	250G
- Wheat	-	C	-	-	-	-	-	100SG*	45	250
Ryegrass - Annual	-	1-1.4	2.0	800	S	-	-	100S*	-	300-375
Sand Fescue	-	1-1.4	2.0S	S	-	-	-	-	-	-
Silver Grasses	-	1-1.4	2.0S	S	-	-	-	-	-	-
Wild Oats	1.6	S	C	C	-	-	-	70S*	45	125 or 250
Registration in S.A.	R	R	R	R	NR	R	R	R	P	R

For more details on herbicide treatments see page 5 : 18

Consult supplier or Department of Primary Industries for more information.

Product marked 'NR' are not registered for faba beans, but trials indicate potential use in faba beans.

Faba beans

Suggested Rate of Product/ha 2008

	Fusion® Super (g/ha)	Factor® WG (g/ha)	Sertin® 186 EC (l/ha)	Verdict® 520 (ml/ha)	Asset® (ml/ha)	Leopard®, Tzar®, Targa®, Eilantra® (ml/ha)	Targa® ,Bolt, Tzar® Bolt (ml/ha)	Select®, Sequence®, Status® (ml/ha)	Correct® (ml/ha)	Fusilade® Forte (ml/ha)	Aramo® (ml/ha)
Timing											
Crop	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre-F	Pre F	Pre F	Pre F	Pre F
Weeds	2 leaf to ET	2 leaf to ET	2-6 leaf	2-5 leaf	2-5 leaf	3-5 leaf	3-5 leaf	2 leaf to FT	3-5 leaf	2 leaf to ET	2 leaf to T
Broad Leaf Weeds											
Bedstraw	-	-	-	-	-	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-	-	-	-
Cape Weed	-	-	-	-	-	-	-	-	-	-	-
Charlock	-	-	-	-	-	-	-	-	-	-	-
Deadnettle	-	-	-	-	-	-	-	-	-	-	-
Dock - Seedling	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Red & White	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Common	-	-	-	-	-	-	-	-	-	-	-
Geranium	-	-	-	50-100	-	-	-	-	-	-	-
Hoary cress	-	-	-	-	-	-	-	-	-	-	-
Horehound Seedlings	-	-	-	-	-	-	-	-	-	-	-
Ice-plant	-	-	-	-	-	-	-	-	-	-	-
Lettuce - Prickly	-	-	-	-	-	-	-	-	-	-	-
Medics	-	-	-	-	-	-	-	-	-	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-	-
Mustard Ball	-	-	-	-	-	-	-	-	-	-	-
Mustard - Indian Hedge	-	-	-	-	-	-	-	-	-	-	-
Poppy - Rough	-	-	-	-	-	-	-	-	-	-	-
Radish	-	-	-	-	-	-	-	-	-	-	-
Sheepweed	-	-	-	-	-	-	-	-	-	-	-
Shepherd's Purse	-	-	-	-	-	-	-	-	-	-	-
Sorrel - Seedlings	-	-	-	-	-	-	-	-	-	-	-
Soursofs	-	-	-	-	-	-	-	-	-	-	-
Speedwell	-	-	-	-	-	-	-	-	-	-	-
Tares	-	-	-	-	-	-	-	-	-	-	-
Three Corner Jack	-	-	-	-	-	-	-	-	-	-	-
Toadrush	-	-	-	-	-	-	-	-	-	-	-
Turnip Weeds	-	-	-	-	-	-	-	-	-	-	-
Ward's Weed	-	-	-	-	-	-	-	-	-	-	-
Wire Weed	-	-	-	-	-	-	-	-	-	-	-
Yellow Burr Weed	-	-	-	-	-	-	-	-	-	-	-
Grasses											
Barley Grass	230-320	80-180	H	50-100	200-400	250	125	175-500	200	410-820	175-250
Brome Grass	285-320	H	H	50-100	200-400	300-375	150-190	175-500	300	410-820	175-250
Phalaris	230-320	H	0.5-1.0	50-100	200-400	S	S	150-500	-	410-820	175-250
Cereals - Barley	230-320	H	H	50-100	200-400	250	125	500	200	410-820	175-250
- Oats	230-320	H	1.0	50-100	200-400	250G	125G	200-500	200	410-820	175-250
- Wheat	230-320	H	1.0	50-100	200-400	250	125	200-500	200	410-820	175-250
Ryegrass - Annual	230-320	80-180	0.5-1.0	75-100	300-400	300-375	150-190	150-500	450	410-820	175-300
Sand Fescue	-	-	-	-	-	-	-	-	-	-	-
Silver Grasses	-	-	-	-	-	-	-	250-500S	-	-	-
Wild Oats	230-320	80-180	0.75-1.0	37-75	150-300	125-250	65-125	175-500	250	410-820	175-250
Registration in S.A.	R	R	R	R	R	R	R	R	R	R	R

Use: 1 - 1.5l/ha Simazine and 1.0l/ha Trifluralin where annual ryegrass and wild oats are major problems.

Code: - Not Effective • Insufficient Information C Some control under certain conditions G Not registered. This use has been derived from limited trials. S Suppression only P Permit

* Suppression of grasses for up to 8 weeks with Spinnaker H See label for mix with another product

Key to Abbreviations: Pre S pre sowing Pre E pre emergence Post S post sowing Post E post emergence ET early tillering Pre F pre flowering T tillering FT fully tillered

Lentils

Suggested Rate of Product/ha 2008

	Rifle® , Stomp® (l/ha)	Trifluralin 480 (l/ha)	Diuron granules (g/ha)	Lexone® DF (g/ha)	Sencor® 480 SC (ml/ha)	Bonanza Elite Brodal® Options (ml/ha)	Broadstrike® (g/ha)	Pantera® (ml/ha)
Timing								
Crop	Pre S	Pre S	Post S Pre E	Post S- Pre E	Post S- Pre E	4 node	4-8 leaf	Pre pod
Weeds	Pre E	Pre E	Pre E	Pre E	Pre E	to 4 leaf	to 5cm	3 leaf to ET
Broad Leaf Weeds								
Bedstraw	-	C	-	-	-	-	25	-
Bifora	-	-	-	-	-	-	SG	-
Cape Weed	-	-	275-550	180-380	280-580	S	SG	-
Charlock	-	-	830	180-380	280-580	200	25	-
Deadnettle	-	S	830	180-380	280-580	200	-	-
Dock - Seedlings	-	-	-	180-380	280-580	-	-	-
Fumitory - Red & White	SG	1.25	-	180-380	280-580	-	-	-
Fumitory - Common	•	-	-	180-380	280-580	-	-	-
Geranium	-	-	275-550	-	-	-	SG	-
Hoary cress	-	-	-	-	-	-	SG	-
Horehound Seedlings	-	-	-	180-380	280-580	-	-	-
Ice-plant	-	-	830	•	•	-	25G	-
Lettuce-Prickly	-	-	S	•	•	200*	-	-
Medics	-	-	-	C	C	-	-	-
Muskweed	-	-	-	-	-	-	SG	-
Mustard - Ball	-	-	•	180-380	280-580	•	25	-
Mustard - Indian Hedge	-	-	830	180-380	280-580	150-200	25	-
Poppy - Rough	-	1.25	830	180-380	280-580	S	-	-
Radish	-	-	C	180-380	280-580	200	25S	-
Sheepweed	-	SG	S	180-380	280-580	S	-	-
Shepherd's Purse	-	-	-	180-380	280-580	S	25	-
Sorrel - Seedlings	-	-	-	180-380	280-580	S	SG	-
Soursobs	-	-	S	-	-	-	-	-
Speedwell	-	S	-	180-380	280-580	S	-	-
Tares	-	-	-	C	C	S	SG	-
Three Corner Jack	-	S	275-550	180-380	280-580	-	SG	-
Toadrush	-	-	275-550	180-380	280-580	S	-	-
Turnip Weed - Long Fruited	-	-	830	180-380	280-580	150-200	25	-
- Short Fruited	-	-	830	180-380	280-580	200	25	-
Ward's Weed	-	-	•	•	•	C	25	-
Wire Weed	2.0	1.25	-	180-380	280-580	S	-	-
Yellow Burr Weed	-	SG	-	180-380	280-580	S	25	-
Grasses								
Barley Grass	SG	1.25	-	C	C	-	-	250
Brome Grass	SG	S	-	-	-	-	-	300-375
Canary Grass	-	1.25	-	-	-	-	-	-
Cereals - Barley	-	-	-	-	-	-	-	250
- Oats	-	S	-	-	-	-	-	250G
- Wheat	-	-	-	-	-	-	-	250
Ryegrass - Annual	2.0	1.25	S	-	-	-	-	300-375
Sand Fescue	2.0S	1.25	-	-	-	-	-	-
Silver Grasses	2.0S	S	-	-	-	-	-	-
Wild Oats	C	C	-	-	-	-	-	125 or 250
Registration in S.A.	NR	R	NR	R	R	R	R	R

For more details on herbicide treatments see page 5 : 18

Consult supplier or Department of Primary Industries for more information.

Product marked 'NR' are not registered for lentils, but trials indicate potential use in lentils.

Lentils

Suggested Rate of Product/ha 2008

	Fusion® Super (g/ha)	Factor® WG (g/ha)	Fusilade® Forte (ml/ha)	Sertin® 186 EC (l/ha)	Verdic® 520 (ml/ha)	Asset® (ml/ha)	Leopard®, Tzar® Targa®, Eilantra® (ml/ha)	Targa®, Bolt, Tzar® Bolt (ml/ha)	Select® Sequence®, Status® (ml/ha)	Correct® (ml/ha)	Aramo® (ml/ha)
Timing											
Crop	Pre F	To 7 node	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	To 7 node	Pre F	Pre F
Weeds	2 leaf to ET	2 leaf to ET	2 leaf to ET	2-6 leaf	2-5 leaf	3-5 leaf	3-5 leaf	3-5 leaf	2 leaf - FT	3-5 leaf	2 leaf to T
Broad Leaf Weeds											
Bedstraw	-	-	-	-	-	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-	-	-	-
Cape Weed	-	-	-	-	-	-	-	-	-	-	-
Charlock	-	-	-	-	-	-	-	-	-	-	-
Deadnettle	-	-	-	-	-	-	-	-	-	-	-
Dock - Seedlings	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Red & White	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Common	-	-	-	-	-	-	-	-	-	-	-
Geranium	-	-	-	-	50-100	-	-	-	-	-	-
Hoary cress	-	-	-	-	-	-	-	-	-	-	-
Horehound Seedlings	-	-	-	-	-	-	-	-	-	-	-
Ice-plant	-	-	-	-	-	-	-	-	-	-	-
Lettuce-Prickly	-	-	-	-	-	-	-	-	-	-	-
Medics	-	-	-	-	-	-	-	-	-	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-	-
Mustard - Ball	-	-	-	-	-	-	-	-	-	-	-
Mustard - Indian Hedge	-	-	-	-	-	-	-	-	-	-	-
Poppy - Rough	-	-	-	-	-	-	-	-	-	-	-
Radish	-	-	-	-	-	-	-	-	-	-	-
Sheepweed	-	-	-	-	-	-	-	-	-	-	-
Shepherd's Purse	-	-	-	-	-	-	-	-	-	-	-
Sorrel - Seedlings	-	-	-	-	-	-	-	-	-	-	-
Soursofs	-	-	-	-	-	-	-	-	-	-	-
Speedwell	-	-	-	-	-	-	-	-	-	-	-
Tares	-	-	-	-	-	-	-	-	-	-	-
Three Corner Jack	-	-	-	-	-	-	-	-	-	-	-
Toadrush	-	-	-	-	-	-	-	-	-	-	-
Turnip Weed	-	-	-	-	-	-	-	-	-	-	-
Ward's Weed	-	-	-	-	-	-	-	-	-	-	-
Wire Weed	-	-	-	-	-	-	-	-	-	-	-
Yellow Burr Weed	-	-	-	-	-	-	-	-	-	-	-
Grasses											
Barley Grass	230-320	80-180	410-820	H	50-100	200-400	250	125	175-500	200	175-250
Brome Grass	285-320	H	410-820	H	50-100	200-400	300-375	150-190	175-500	300	175-250
Phalaris	230-320	H	410-820	0.5-1.0	50-100	200-400	S	S	175-500	-	175-250
Cereals - Barley	230-320	H	410-820	H	50-100	200-400	250	125	500	200	175-250
- Oats	230-320	H	410-820	1.0	50-100	200-400	250G	125G	200-500	200	175-250
- Wheat	230-320	H	410-820	1.0	50-100	200-400	250	125	200-500	200	175-250
Ryegrass - Annual	230-320	80-180	410-820	0.5-1.0	75-100	300-400	300-375	150-190	150-500	450	175-300
Sand Fescue	-	-	-	-	-	-	-	-	-	-	-
Silver Grasses	-	-	-	-	-	-	-	-	250-500S	-	-
Wild Oats	230-320	80-180	410-820	0.75-1.0	37-75	150-300	125-250	65-125	175-500	250	175-250
Registration in S.A.	R	R	RP	R	R	R	R	R	R	R	R

Code: - Not Effective • Insufficient Information C Some control under certain conditions G Not registered. This use has been derived from limited trials. S Suppression only RP Registration pending. H See label for mix with another product.

Key to Abbreviations: Pre S pre sowing Pre E pre emergence Post S post sowing Post E post emergence Pre F pre flowering T tillering FT fully tillered
*Control of Prickly Lettuce up to 2 leaf only with Brodal® Options

Lupins

Suggested Rate of Product/ha 2008

	Avadex® Xtra (l/ha)	Simazine granules (g/ha)	Rifle®, Stomp® (l/ha)	Trifluralin 480 (l/ha)	Diuron® granules (g/ha)	Lexone® DF (g/ha)	Senco® 480 SC (ml/ha)	Bonanza Elite Brodal® Options (ml/ha)	Sniper® (g/ha)	Eclipse® (g/ha)	Fusion® Super (g/ha)	Hoegrass® (l/ha)
Timing												
Crop	Pre S	Pre S or Post S-Pre E	Pre S	Pre S	Post S- Pre E	Pre E	Pre E 2-6 leaf	Pre E or 2-6 leaf	Pre F	Pre F	Pre F	
Weeds	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	Up to 4 leaf	2-6 leaf	2-10 leaf	2 leaf to ET	2-4 leaf
Broad Leaf Weeds												
Bedstraw	-	-	-	C	-	-	-	-	-	10SG	-	-
Bifora	-	-	-	-	-	-	-	-	-	SG	-	-
Cape Weed	-	1.1-2.2	-	-	275-550	180-380	280-580	S	50S	SG	-	-
Charlock	-	•	-	-	830	180-380	280-580	200	•	7-10G	-	-
Deadnettle	-	SG	-	S	830	180-380	280-580	200	•	-	-	-
Dock - Seedlings	-	-	-	-	-	180-380	280-580	-	-	-	-	-
Fumitory - Red & White	-	1.1-2.2	S	1.25-1.7	-	180-380	280-580	-	-	-	-	-
Fumitory Common	-	1.1-2.2	•	-	-	180-380	280-580	-	-	-	-	-
Geranium	-	1.1-2.2	-	-	275-550	-	-	-	-	-	-	-
Hoary Cress	-	-	-	-	-	-	-	-	-	SG*	-	-
Horehound Seedlings	-	S	-	-	-	180-380	280-580	-	-	SG	-	-
Ice-plant	-	S	-	-	830	•	•	-	-	-	-	-
Lettuce - Prickly	-	-	-	-	S	•	•	200*	•	-	-	-
Medics	-	S	-	-	-	C	C	-	-	10SG	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-	-	-
Mustard Ball	-	S	-	-	•	180-380	280-580	•	•	7-10G	-	-
Mustard - Indian Hedge	-	1.1-2.2	-	-	830	180-380	280-580	150-200	50G	7-10G	-	-
Poppy - Rough	-	-	-	1.25-1.7	830	180-380	280-580	S	•	-	-	-
Radish	-	S	-	-	C	180-380	280-580	200	50	7-10	-	-
Sheepweed	-	1.1-2.2	-	S	S	180-380	280-580	S	•	SG	-	-
Shepherd's Purse	-	1.1-2.2	-	-	-	180-380	280-580	S	•	SG	-	-
Sorrel - Seedling	-	1.1-2.2	-	-	-	180-380	280-580	S	•	-	-	-
Soursobs	-	S	-	-	S	-	-	-	-	-	-	-
Speedwell	-	1.1-2.2	-	S	-	180-380	280-580	S	•	-	-	-
Tares	-	-	-	-	-	C	C	S	-	10SG	-	-
Three Corner Jack	-	1.1-2.2G	-	S	275-550	180-380	280-580	-	-	SG	-	-
Toadrush	-	1.1-2.2	-	-	275-550	180-380	280-580	S	•	-	-	-
Turnip Weed - Long Fruited	-	1.1-2.2	-	-	830	180-380	280-580	150-200	•	7-10G	-	-
- Short Fruited	-	1.1-2.2	-	-	830	180-380	280-580	200	50G	7-10G	-	-
Ward's Weed	-	1.1-2.2	-	-	•	•	•	C	•	•	-	-
Wire Weed	-	1.1-2.2	2.0	1.25-1.7	-	180-380	280-580	S	•	-	-	-
Yellow Burr Weed	-	S	-	S	-	180-380	280-580	S	•	7-10G	-	-
Grasses												
Barley Grass	-	1.1-2.2	SG	1.25-1.7	-	C	C	-	-	-	230-320	-
Brome Grass	-	S	SG	S	-	-	-	-	-	-	285-320	-
Phalaris	-	-	-	1.25-1.7	-	-	-	-	-	-	230-320	-
Cereals - Barley	-	C	-	-	-	-	-	-	-	-	230-320	-
- Oats	-	C	-	S	-	-	-	-	-	-	230-320	S
- Wheat	-	C	-	-	-	-	-	-	-	-	230-320	-
Ryegrass - Annual	-	1.1-2.2	2.0	1.25-1.7	S	-	-	-	-	-	230-320	1.0
Sand Fescue	-	1.1-2.2	2.0S	1.25-1.7	-	-	-	-	-	-	-	-
Silver Grasses	-	1.1-2.2	2.0S	S	-	-	-	-	-	-	-	-
Wild Oats	1.6	S	C	C	-	-	-	-	-	-	230-320	1.5-2.0
Registration in S.A.	R	R	R	R	NR	NR	NR	R	R	R**	R	R

For more details on herbicide treatments see page 5 : 18

Product marked 'NR' are not registered for lupins, but trials indicate potential use in lupins.

Consult supplier or Department of Primary Industries for more information.

*Control of Prickly Lettuce up to 2 leaf only with Brodal®.

**See label for tolerant varieties.

Lupins

Suggested Rate of Product/ha 2008

	Pantera® (ml/ha)	Factor® WG (g/ha)	Sertin® 186 EC (l/ha)	Verdict® 520 (ml/ha)	Asset® (ml/ha)	Leopard®, Tzar® Targa®, Elantra® (ml/ha)	Targa® Bolt, Tzar® Bolt (ml/ha)	Select® Sequence®, Status® (ml/ha)	Correct® (ml/ha)	Fusilade® Forte (ml/ha)	Aramo® (ml/ha)
Timing											
Crop	Pre pod	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F
Weeds	3 leaf to ET	2 leaf to ET	2-6 leaf	2-5 leaf	3-5 leaf	3-5 leaf	3-5 leaf	2 leaf - FT	3-5 leaf	2 leaf to ET	2 leaf to T
Broad Leaf Weeds											
Bedstraw	-	-	-	-	-	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-	-	-	-
Cape Weed	-	-	-	-	-	-	-	-	-	-	-
Charlock	-	-	-	-	-	-	-	-	-	-	-
Deadnettle	-	-	-	-	-	-	-	-	-	-	-
Dock - Seedlings	-	-	-	-	-	-	-	-	-	-	-
Fumitory - Red & White	-	-	-	-	-	-	-	-	-	-	-
Fumitory Common	-	-	-	-	-	-	-	-	-	-	-
Geranium	-	-	-	50-100	-	-	-	-	-	-	-
Hoary Cress	-	-	-	-	-	-	-	-	-	-	-
Horehound Seedlings	-	-	-	-	-	-	-	-	-	-	-
Ice-plant	-	-	-	-	-	-	-	-	-	-	-
Lettuce - Prickly	-	-	-	-	-	-	-	-	-	-	-
Medics	-	-	-	-	-	-	-	-	-	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-	-
Mustard Ball	-	-	-	-	-	-	-	-	-	-	-
Mustard - Indian Hedge	-	-	-	-	-	-	-	-	-	-	-
Poppy - Rough	-	-	-	-	-	-	-	-	-	-	-
Radish	-	-	-	-	-	-	-	-	-	-	-
Sheepweed	-	-	-	-	-	-	-	-	-	-	-
Shepherd's Purse	-	-	-	-	-	-	-	-	-	-	-
Sorrel - Seedling	-	-	-	-	-	-	-	-	-	-	-
Soursobs	-	-	-	-	-	-	-	-	-	-	-
Speedwell	-	-	-	-	-	-	-	-	-	-	-
Tares	-	-	-	-	-	-	-	-	-	-	-
Three Corner Jack	-	-	-	-	-	-	-	-	-	-	-
Toadrush	-	-	-	-	-	-	-	-	-	-	-
Turnip Weed - Long Fruited - Short Fruited	-	-	-	-	-	-	-	-	-	-	-
Ward's Weed	-	-	-	-	-	-	-	-	-	-	-
Wire Weed	-	-	-	-	-	-	-	-	-	-	-
Yellow Burr Weed	-	-	-	-	-	-	-	-	-	-	-
Grasses											
Barley Grass	250	80-180	H	50-100	200-400	250	125	175-500	200	410-820	175-250
Brome Grass	300-375	H	H	50-100	200-400	300-375	150-190	175-500	300	410-820	175-250
Phalaris	-	H	0.5-1.0	50-100	200-400	S	S	150-500	-	410-820	175-250
Cereals - Barley	250	H	H	50-100	200-400	250	125	500	200	410-820	175-250
- Oats	250G	H	1.0	50-100	200-400	250	125G	200-500	200	410-820	175-250
- Wheat	250	H	1.0	50-100	200-400	250	125	200-500	200	410-820	175-250
Ryegrass - Annual	300-375	80-180	0.5-1.0	75-100	300-400	300-375	150-190	150-500	450	410-820	175-250
Sand Fescue	-	-	-	-	-	-	-	-	-	-	-
Silver Grasses	-	-	-	-	-	-	-	250-500S	-	-	-
Wild Oats	125 or 250	80-180	0.75-1.0	37-75	150-300	125-250	65-125	175-500	250	410-820	175-250
Registration in S.A.	R	R	R	R	R	R	R	R	R	R	R

Code: - Not Effective • Insufficient Information C Some control under certain conditions G Not registered. This use has been derived from limited trials. S Suppression only * Up to 2 leaf only.H See label for mix with another product. P Permit

Key to Abbreviations: Pre S pre sowing Pre E pre emergence Post S post sowing Post E post emergence ET early tillering Pre F pre flowering T tillering FT fully tillered

Peas

Suggested Rate of Product/ha 2008

	Rifle® Stomp® (l/ha)	Trifluralin 480 (l/ha)	Avadex® Xtra (l/ha)	Diuron granules (g/ha)	Spinnaker® 700WDG (g/ha)		Lexone® DF (g/ha)	Sencor® 480 SC (ml/ha)	Raptor® WG (g/ha)	Sniper® (g/ha)	Broadstrike® (g/ha)	Brodal® Options Bonanza Elite (ml/ha)
Timing												
Crop	Pre S	Pre S	Pre S	Post S -Pre E	Pre E	Post E	Post S to 3 node	Post S to 3 node	To 4 node	2-6 leaf	2-6 node	4 node
Weeds	Per E	Pre E	Pre E	Pre E	Pre E	Post E to 3 leaf	Pre E to 3 leaf	Pre E to 3 leaf	To 3 node	2-6 leaf	2-6 leaf	To 4 leaf
Broad Leaf Weeds												
Bedstraw	-	C	-	-	70- 100S	70- 100S	-	-	45S	-	25	-
Bifora	-	-	-	-	70- 100S	-	C	C	-	-	SG	-
Cape Weed	-	-	-	275-550	-	-	180-380	280-580	-	50S	SG	200S
Charlock	-	-	-	830	70G	•	180-380	280-580	-	•	25	200
Deadnettle	-	S	-	830	70	70	180-380	280-580	45	•	-	200
Dock - Seedling	-	-	-	-	-	-	180-380	280-580	-	-	-	-
Fumitory Red & White	SG	1.2-1.7	-	-	-	-	180-380	280-580	-	-	-	-
Fumitory Common	•	-	-	-	-	-	180-380	280-580	-	-	-	-
Geranium	-	-	-	275-550	70	70G	-	-	45	-	SG	-
Hoary cress	-	-	-	-	-	-	-	-	-	-	SG	-
Horehound Seedling	-	-	-	-	-	-	180-380	280-580	-	-	-	-
Ice-plant	-	-	-	830	-	-	•	•	-	-	25G	-
Lettuce - Prickly	-	-	-	S	-	-	180-380	280-580	-	•	-	200**
Medics	-	-	-	-	-	-	C	C	-	-	-	-
Muskweed	-	-	-	-	70G	70G	-	-	45SG	-	SG	-
Mustard - Ball	-	-	-	•	70G	70G	180-380	280-580	45G	•	25	•
Mustard - Indian Hedge	-	-	-	830	70	70	180-380	280-580	45	50G	25	150-200
Poppy - Rough	-	1.2-1.7G	-	830	-	-	180-380	280-580	-	•	-	200S
Radish	-	-	-	C	70- 100S	SG	180-380	280-580	45S	50	25S	200
Sheepweed	-	SG	-	S	70SG	70SG	180-380	280-580	45SG	•	-	200S
Shepherd's Purse	-	-	-	-	70	70SG	180-380	280-580	45S	•	25	200S
Sorrel - Seedlings	-	-	-	-	100SG	100SG	180-380	280-380	•	•	SG	200S
Soursobs	-	-	-	S	100SG	•	-	-	•	-	-	-
Speedwell	-	S	-	-	70- 100S	70G	180-380	280-580	45G	•	-	200S
Tares	-	-	-	-	-	-	CG	CG	-	-	SG	200S
Three Corner Jack	-	S	-	275-550	70S	-	180-380	280-580	45S	-	SG	-
Toadrush	-	-	-	275-550	70	70	180-380	280	45SG	•	-	200S
Turnip Weed-Long Fruited	-	-	-	830	70G	70S	180-380	280-580	45	•	25	150-200
-Short Fruited	-	-	-	830	70	70SG	180-380	280-580	45	50G	25	200
Ward's Weed	-	-	-	•	•	•	180-380	280-580	•	•	25	C
Wire Weed	2.0	1.2-1.7	-	-	70S	70S	180-380	280-580	45S	•	-	200S
Yellow Burr Weed	-	SG	-	-	70- 100S	70SG	180-380	280-580	•	•	25	200S
Grasses												
Barley Grass	SG	1.2-1.7	-	-	100S*	-	C	C	45	-	-	-
Brome Grass	SG	S	-	-	100SG*	-	-	-	45	-	-	-
Phalaris	-	1.2-1.7	-	-	100SG*	-	-	-	-	-	-	-
Cereals - Barley	-	-	-	-	100SG*	-	-	-	45	-	-	-
- Oats	-	S	-	-	100SG*	-	-	-	45	-	-	-
- Wheat	-	-	-	-	100SG**	-	-	-	45	-	-	-
Ryegrass - Annual	2.0	1.2-1.7	-	S	100G*	-	-	-	-	-	-	-
Sand Fescue	2.0S	1.2-1.7G	-	-	-	-	-	-	-	-	-	-
Silver Grasses	2.0S	S	-	-	-	-	-	-	-	-	-	-
Wild Oats	C	C	1.6	-	70S*	-	-	-	45	-	-	-
Registration	R	R	R	NR	R	R	R	R	R	R	R	R

For more details on herbicide treatments see page 5 : 18

WARNING: Diseased or damaged crops (rolling or wind) may be more susceptible to herbicide injury.

Lexone not recommended on Alma peas.

See label for tolerance of pea varieties to Sencor.

Peas

Suggested Rate of Product/ha 2008

	Pantera® (ml/ha)	MCPA Sodium (l/ha)	Fusion® Super (g/ha)	Factor® WG (g/ha)	Sertin® 186 EC (l/ha)	Verdict® 520 (ml/ha)	Asset® (ml/ha)	Leopard®, Tzar® Targa®, Elantra® (ml/ha)	Targa®, Bolt, Tzar® Bolt (ml/ha)	Select® Sequence®, Status® (ml/ha)	Correct® (ml/ha)	Fusilade® Forte (ml/ha)	Aramo® (ml/ha)
Timing													
Crop	Pre pod	Pre F	10cm to F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F
Weeds	3 leaf to ET	2-6 leaf	Post E	2 leaf to ET	2-6 leaf	2-5 leaf	3-5 leaf	3-5 leaf	3-5 leaf	2 leaf - FT	3-5 leaf	2 leaf to ET	2 leaf to T
Broad Leaf Weeds													
Bedstraw	-	-	-	-	-	-	-	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-	-	-	-	-	-
Cape Weed	-	-	-	-	-	-	-	-	-	-	-	-	-
Charlock	-	0.7	-	-	-	-	-	-	-	-	-	-	-
Deadnettle	-	-	-	-	-	-	-	-	-	-	-	-	-
Dock - Seedling	-	-	-	-	-	-	-	-	-	-	-	-	-
Fumitory Red & White	-	-	-	-	-	-	-	-	-	-	-	-	-
Fumitory Common	-	-	-	-	-	-	-	-	-	-	-	-	-
Geranium	-	-	-	-	-	50-100	-	-	-	-	-	-	-
Hoary cress	-	-	-	-	-	-	-	-	-	-	-	-	-
Horehound Seedling	-	-	-	-	-	-	-	-	-	-	-	-	-
Ice-plant	-	-	-	-	-	-	-	-	-	-	-	-	-
Lettuce - Prickly	-	0.7G	-	-	-	-	-	-	-	-	-	-	-
Medics	-	-	-	-	-	-	-	-	-	-	-	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-	-	-	-
Mustard - Ball	-	S	-	-	-	-	-	-	-	-	-	-	-
Mustard - Indian Hedge	-	0.7	-	-	-	-	-	-	-	-	-	-	-
Poppy - Rough	-	•	-	-	-	-	-	-	-	-	-	-	-
Radish	-	S	-	-	-	-	-	-	-	-	-	-	-
Sheepweed	-	-	-	-	-	-	-	-	-	-	-	-	-
Shepherd's Purse	-	•	-	-	-	-	-	-	-	-	-	-	-
Sorrel - Seedlings	-	-	-	-	-	-	-	-	-	-	-	-	-
Soursobs	-	-	-	-	-	-	-	-	-	-	-	-	-
Speedwell	-	-	-	-	-	-	-	-	-	-	-	-	-
Tares	-	S	-	-	-	-	-	-	-	-	-	-	-
Three Corner Jack	-	-	-	-	-	-	-	-	-	-	-	-	-
Toadrush	-	-	-	-	-	-	-	-	-	-	-	-	-
Turnip Weed-Long Fruited	-	1.4	-	-	-	-	-	-	-	-	-	-	-
-Short Fruited	-	1.4	-	-	-	-	-	-	-	-	-	-	-
Ward's Weed	-	-	-	-	-	-	-	-	-	-	-	-	-
Wire Weed	-	1.4	-	-	-	-	-	-	-	-	-	-	-
Yellow Burr Weed	-	-	-	-	-	-	-	-	-	-	-	-	-
Grasses													
Barley Grass	250	-	230-320	80-180	H	50-100	200-400	250	125	175-500	200	410-820	175-250
Brome Grass	300-375	-	285-320	H	H	50-100	200-400	300-375	150-190	175-500	300	410-820	175-250
Phalaris	-	-	230-320	H	0.5-1.0	50-100	200-400	S	S	150-500	-	410-820	175-250
Cereals -Barley	250	-	230-320	H	H	50-100	200-400	250	125	500	200	410-820	175-250
- Oats	250G	-	230-320	H	1.0	50-100	200-400	250G	125G	200-500	200	410-820	175-250
- Wheat	250	-	230-320	H	1.0	50-100	200-400	250	125	200-500	200	410-820	175-250
Ryegrass - Annual	300-375	-	230-320	80-180	0.5-1.0	75-100	300-400	300-375	150-190	150-500	450	410-820	175-300
Sand Fescue	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver Grasses	-	-	-	-	-	-	-	-	-	250-500S	-	-	-
Wild Oats	125 or 250	-	230-320	80-180	0.75-1.0	37-75	150-300	125-250	65-125	175-500	250	410-820	175-250
Registration in S.A.	R	R	R	R	R	R	R	R	R	R	R	R	R

Code: - Not Effective • Insufficient Information C Some control under certain conditions G Not registered. This use has been derived from limited trials. S Suppression only
 *Suppression of grasses for up to 8 weeks with Spinnaker
 **Control of Prickly Lettuce up to 2 leaf only with Brodal®.

Add 125-150ml/ha MCPA amine. H See label for mix with another product.

Key to Abbreviations: Pre S pre sowing Pre E pre emergence
 Post S post sowing Post E post emergence ET early tillering
 Pre F pre flowering T tillering FT fully tillered

Vetch

Common vetch (*Vicia sativa*)

Suggested Rate of Product/ha 2008

	Rifle®, Stomp® (l/ha)	Trifluralin 480 (l/ha)	Simazine granules (g/ha)	Diuron granules (g/ha)	Lexone® DF (g/ha)	Sencor® 480 SC (ml/ha)	Pantera® (ml/ha)	Fusion® Super (g/ha)
Timing								
Crop	Pre S	Pre S	Pre S Pre E	Post S Pre E	Post S Per E	Post S Pre E	Pre pod	Pre F
Weeds	Pre E	Pre E	Pre E	Pre E	Pre E	Pre E	3 leaf to ET	2 leaf to ET
Broad Leaf Weeds								
Bedstraw	-	C	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-
Cape Weed	-	-	550-830	275-550	180-380	280-580	-	-
Charlock	-	-	•	830	180-380	280-580	-	-
Deadnettle	-	S	S	830	180-380	280-580	-	-
Dock - Seedling	-	-	-	-	180-380	280-580	-	-
Fumitory - Red & White	SG	1.25-1.7	550-830	-	180-380	280-580	-	-
Fumitory - Common	•	-	550-830	-	180-380	280-580	-	-
Geranium	-	-	550-830	275-550	-	-	-	-
Hoary cress	-	-	-	-	-	-	-	-
Horehound Seedlings	-	-	S	-	180-380	280-580	-	-
Ice-plant	-	-	S	830	•	•	-	-
Lettuce - Prickly	-	-	-	S	•	•	-	-
Medics	-	-	S	-	C	C	-	-
Muskweed	-	-	-	-	-	-	-	-
Mustard Ball	-	-	S	•	180-380	280-580	-	-
Mustard - Indian Hedge	-	-	550-830	830	180-380	280-580	-	-
Poppy - Rough	-	1.25-1.7	-	830	180-380	280-580	-	-
Radish	-	-	S	C	180-380	280-580	-	-
Sheepweed	-	S	550-830	S	180-380	280-580	-	-
Shepherd's Purse	-	-	550-830	-	180-380	280-580	-	-
Sorrel - Seedlings	-	-	-	-	180-380	280-580	-	-
Soursofs	-	-	S	S	-	-	-	-
Speedwell	-	S	550-830	-	180-380	280-580	-	-
Tares	-	-	-	-	C	C	-	-
Three Corner Jack	-	S	S	275-550	180-380	280-580	-	-
Toadrush	-	-	550-830	275-550	180-380	280-580	-	-
Turnip Weeds	-	-	550-830	830	180-380	280-580	-	-
Ward's Weed	-	-	550-830	•	•	•	-	-
Wire Weed	2.0	1.25-1.7	550-830	-	180-380	280-580	-	-
Yellow Burr Weed	-	S	S	-	180-380	280-580	-	-
Grasses								
Barley Grass	SG	-	S	-	C	C	250	230-320
Brome Grass	SG	-	S	-	-	-	300-375	285-320
Phalaris	-	•	-	-	-	-	-	230-320
Cereals - Barley	-	-	C	-	-	-	250	230-320
- Oats	-	S	C	-	-	-	250G	230-320
- Wheat	-	-	C	-	-	-	250	230-320
Ryegrass - Annual	2.0	1.0	S	S	-	-	300-375	230-320
Sand Fescue	2.0S	S	550-830	-	-	-	-	-
Silver Grasses	2.0S	S	550-830	-	-	-	-	-
Wild Oats	C	C	S	-	-	-	125 or 250	230-320
Registration in S.A.	NR	R	NR	NR	R	R	NR	R

For more details on herbicide treatments see page 5 :18

Consult supplier or Department of Primary Industries for more details.

Product marked 'NR' are not registered for vetch, but trials indicate potential use in vetch.

Vetch

Common vetch (*Vicia sativa*)

Suggested Rate of Product/ha 2008

	Factor® WG (g/ha)	Sertin® 186 EC (l/ha)	Verdict® 520 (ml/ha)	Asset® (ml/ha)	Leopard®, Tzar®, Targa®, Elantra® (ml/ha)	Targa® Bolt, Tzar® Bolt (ml/ha)	Select®, Sequence®, Status® (ml/ha)	Correct® (ml/ha)	Fusilade® Forte (ml/ha)	Aramo® (ml/ha)
Timing										
Crop	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F	Pre F
Weeds	2 leaf to ET	2-6 leaf	2-5 leaf	2-5 leaf	3-5 leaf	3-5 leaf	2 leaf - FT	3-5 leaf	2 leaf to ET	2 leaf to T
Broad Leaf Weeds										
Bedstraw	-	-	-	-	-	-	-	-	-	-
Bifora	-	-	-	-	-	-	-	-	-	-
Cape Weed	-	-	-	-	-	-	-	-	-	-
Charlock	-	-	-	-	-	-	-	-	-	-
Deadnettle	-	-	-	-	-	-	-	-	-	-
Dock - Seedling	-	-	-	-	-	-	-	-	-	-
Fumitory - Red & White	-	-	-	-	-	-	-	-	-	-
Fumitory - Common	-	-	-	-	-	-	-	-	-	-
Geranium	-	-	50-100	-	-	-	-	-	-	-
Hoary cress	-	-	-	-	-	-	-	-	-	-
Horehound Seedlings	-	-	-	-	-	-	-	-	-	-
Ice-plant	-	-	-	-	-	-	-	-	-	-
Lettuce - Prickly	-	-	-	-	-	-	-	-	-	-
Medics	-	-	-	-	-	-	-	-	-	-
Muskweed	-	-	-	-	-	-	-	-	-	-
Mustard Ball	-	-	-	-	-	-	-	-	-	-
Mustard - Indian Hedge	-	-	-	-	-	-	-	-	-	-
Poppy - Rough	-	-	-	-	-	-	-	-	-	-
Radish	-	-	-	-	-	-	-	-	-	-
Sheepweed	-	-	-	-	-	-	-	-	-	-
Shepherd's Purse	-	-	-	-	-	-	-	-	-	-
Sorrel - Seedlings	-	-	-	-	-	-	-	-	-	-
Soursobs	-	-	-	-	-	-	-	-	-	-
Speedwell	-	-	-	-	-	-	-	-	-	-
Tares	-	-	-	-	-	-	-	-	-	-
Three Corner Jack	-	-	-	-	-	-	-	-	-	-
Toadrush	-	-	-	-	-	-	-	-	-	-
Turnip Weeds	-	-	-	-	-	-	-	-	-	-
Ward's Weed	-	-	-	-	-	-	-	-	-	-
Wire Weed	-	-	-	-	-	-	-	-	-	-
Yellow Burr Weed	-	-	-	-	-	-	-	-	-	-
Grasses										
Barley Grass	80-180	H	50-100	200-400	250	125	175-500G	200	410-820	175-250
Brome Grass	H	H	50-100	200-400	300-375	150-190	175-500G	300	410-820	175-250
Phalaris	H	0.5-1.0	50-100	200-400	S	S	150-500G	-	410-820	175-250
Cereals - Barley	H	H	50-100	200-400	250	125	500G	200	410-820	175-250
- Oats	H	1.0	50-100	200-400	250G	125G	200-500G	200	410-820	175-250
- Wheat	H	1.0	50-100	200-400	250	125	200-500G	200	410-820	175-250
Ryegrass - Annual	80-180	0.5-1.0	75-100	300-400	300-375	150-190	150-500G	450	410-820	175-300
Sand Fescue	-	-	-	-	-	-	-	-	-	-
Silver Grasses	-	-	-	-	-	-	250-500S	-	-	-
Wild Oats	80-180	0.75-1.0	37-75	150-300	125-250	65-125	175-500G	250	410-820	175-250
Registration in S.A.	R	NR	R	R	R	R	NR	R	R	R

Use: 1 - 1.5l/ha Simazine and 1.0l/ha Trifluralin where annual ryegrass and wild oats are major problems.

Code: - Not Effective • Insufficient Information C Some control under certain conditions G Not registered. This use has been derived from limited trials. S Suppression only H See label for tank mix with another product.

Key to Abbreviations: Pre S pre sowing Pre E pre emergence Post S post sowing Post E post emergence ET early tillering Pre F pre flowering T tillering FT fully tillered

Details on Herbicides

NOTE: These uses are for South Australia. Registrations may differ in other states.

For more details check the label

HERBICIDES

REMARKS

AVADEX® Xtra 500g/L tri-allate	Apply immediately prior to or up to 3 weeks before sowing to a friable seedbed under conditions which allow for incorporation to a depth of 2-4cm. Complete and uniform incorporation is essential. Will not control emerged wild oats or wild oats germinating on the soil surface. Provides 6 to 8 weeks control of wild oats when the seedbed is moist.
SIMAZINE 500g/L simazine (various products) 600g/L Gesatop® 600SC 900g/kg Simagranz®, Simatox®	Apply either pre-sowing or immediately post-sowing which is preferred on lighter soils. Sow crops other than lupins at least 5cm deep. Use the lowest rate on light soils. For Vetch DO NOT use on sands and use lower rate on sandy loams and for Popany or Namoi on heavier soils. Do not be apply to ridged or excessively cloddy soil. For fully reliable results significant rainfall, 20-30mm, is necessary within 2-3 weeks of sowing. If dry conditions are likely to follow spraying, incorporate to no more than 3cm deep. For post-emergent treatment apply when crop has at least one true leaf.
RIFLE®, STOMP® 330 E 330g/L pendimethalin	Incorporate into the soil within 24 hours of application. Seed should be sown below the chemical band. Weeds, trash or clods at spraying reduces efficacy.
TRIFLURALIN 480g/L trifluralin (various products)	Apply to level seedbed 0 to 4 weeks before sowing. Incorporate within 4 hours. With peas and lupins use 1.2 to 1.5L/ha on sands to loams and 1.5 to 1.7L on heavy clay soils. With chickpeas and lentils use no more than 1.25L/ha. With faba beans use no more than 800ml/ha. Weeds, trash or clods at spraying reduces efficacy.
TRIFLUR XCEL (500g/L)	Also registered for chickpeas, faba beans, lentils, lupins, peas and vetch.
BALANCE® 750WG 750g/kg isoxaflutole	For chickpeas only. Apply post-sowing pre-emergence. Can be applied to damp or dry soil. Mechanical incorporation not recommended. Application of Balance PSPE to chickpeas planted in sandy or gravelly soils, or soils low in clay or organic matter may result in crop damage. Heavy rains after the application of Balance may cause crop damage, particularly in sandy or gravelly soils. Application of Balance + simazine in sandy or gravelly soils may result in severe crop damage.
SPINNAKER® 700WDG 700g/kg imazethapyr	Apply to moist, well prepared, clod and weed-free soil after planting and before crop emergence. For maximum activity, sufficient rainfall is required after application and prior to weed emergence to wet soil to a depth of 5cm. DO NOT apply pre-emergent to soils of very high organic matter content or soils prone to waterlogging. Use higher rate if weed population high or if high winter rainfall expected. Under adverse conditions, weeds may not be totally controlled but populations will be significantly reduced and surviving plants will generally be severely retarded. Good crop growth will aid weed control. With chickpeas also add simazine at 1.0-1.5 L/ha. For post emergence (peas only) add BS1000 (200ml/100L) or equivalent rate of non-ionic wetter. Refer to label for details of possible restrictions on cropping the following year.
RAPTOR® WG 700g/kg imazamox	For peas and beans only. Add BS1000 or equivalent at 0.2%. Apply to actively growing broadleaf weeds up to 3 leaf stage and to grasses up to 2 tillers. Weeds may not be totally controlled, but will be severely retarded. DO NOT apply to pea crops stressed by other herbicides or if frost is forecast. DO NOT use on Alma, Excell or Parafield. May cause some stunting of beans.
LEXONE DF, METRIBUZIN 750WP SENCOR 75WG 750g/kg metribuzin SENCOR 480® SC 480g/L metribuzin	Use the lowest rate in light sandy soils. Sow lupins 3-4cm deep and other pulses at least 5cm deep. Apply after rain when soil is wet to the surface. Use medium rate in loams (silt plus clay 40-60%). High rate in heavy soils-clay loams (silt plus clay >60%). DO NOT apply to chickpeas in alkaline sandy soils (silt and clay < 40%). Apply post sowing pre-emergence to moist levelled surface- smooth over press wheel furrows before application or post emergent application (peas only - not Alma) apply to moist soil within six weeks of sowing while weeds are young and actively growing. This timing best for bifora, medic, tares, wild radish and wire weed. Other post emergent herbicides and/or oils may cause crop damage. Check tolerance rating of new varieties. DO NOT spray crops affected by collar or stem rot or nutrient deficiency.

HERBICIDES

REMARKS

BROADSTRIKE® 800g/kg flumetsulam	Registered for field peas, chickpeas and lentils. Use Uptake at 0.5% or BS1000 at 0.2% on lentils only. DO NOT add wetter or oil for other pulses. DO NOT mix with grass herbicide. DO NOT spray if stress conditions or if rain likely within 4 hours. If on duplex soils with topsoil less than 30cm deep DO NOT plant lentils, lupins, faba beans, canola, sunflowers, sorghum or cotton within 2 years of spraying. On other soil types DO NOT plant these crops within 9 months of spraying. DO NOT plant chickpeas or field peas for 3 months.
BRODAL® OPTIONS BONANZA ELITE 500g/L diflufenican	Can be applied post sowing pre-emergence mixed with simazine (for lupins) or else post emergence before weeds are no more than 4 leaf stage and not more than 12cm across. For improved control of prickly lettuce and charlock in peas at 4 leaf add 125 ml/ha MCPA amine to 125 ml/ha Brodal, and at 6 leaf 150 ml/ha MCPA amine to 150 ml/ha Brodal. Complete spray coverage of weeds is necessary for good control. Increasing water volume up to 100L/ha will improve control, but may also increase symptoms of crop damage. DO NOT apply if weeds are under stress. DO NOT use on Northfield lentils. Rainfast 4 hours.
SNIPER® 750g/kg picolinafen	For lupins and peas only. Apply to actively growing crops and weeds. There is some residual control of radish except if soil is dry or coverage of soil surface is inadequate. Rainfast 4 hours.
ARAMO® tepraloxymid	Use lower rate if weeds are small and actively growing. Apply with Hasten®, 200g/L Kwicken® or Uptake at 1%. Rainfast in 1 hour.
ASSET® 130g/L haloxyfop-r	Use lower rate for weeds less than 5 leaf stage. Add Uptake at 0.5% or other spraying oil at 1% and wetter at 0.2%. Use at least 30L water/ha. DO NOT apply if weeds stressed. Rainfast in 1 hour.
FUSILADE® FORTE 128g/L fluazifop	Apply before tillering of grasses. DO NOT apply if weeds are stressed. This product does not need extra adjuvant.
ECLIPSE® 714g/kg metosulam	Apply at 2-12 leaf stage of lupins only. DO NOT add wetter, spraying oil, insecticides, herbicides. Use higher rate on radish if more than 100 per/sq metre or competition from crop is poor. Rainfast in 2 hours. DO NOT spray Merrit after the 8 leaf stage. See label for tolerant varieties.
FACTOR®WG 250g/kg butroxydim	Use lower rate for young weeds and ideal conditions. Use higher rates if weeds at tillering or where less than idea conditions or where denser populations or where some resistance to Group A. Add Supercharge® or Bonza® at 1%.
FUSION® SUPER 212g/kg fluazifop-p & 250g/kg butroxydim	Use lower rate before grasses have tillers. Add Supercharge at 1% or DC-Trate at 2%. Apply in at least 50L water/ha. Rainfast in 1 hour.
CORRECT® 100g/L propaquizafop	Apply when weeds are 3 leaf to early tillering. Add wetting agent at 0.2% of BS 1000® or equivalent or 0.5% Hasten® or Kwickin® oil. Correct® is not compatible with other crop oils. DO NOT apply if weeds are stressed. Rainfast 1 hour.
DIURON 900/kg granular products & 500g/L flowable products	DO NOT use on light sandy soils. DO NOT use more than 650g/ha of granular products or 1.2L/ha of flowable products in sandy loams. Some crop damage can occur in light soil types after heavy rainfall. Sow at least 5cm deep. Less effective if sprayed before sowing.
MCPA SODIUM 240 to 270g/L (various products)	Results variable. Crop distortion and delayed flowering can occur even at low rates. DO NOT apply within 10 days of spraying with other herbicides. Use on peas only. Rainfast in 5 hours.
SERTIN® 186 EC 186/L sethoxydim	Apply when the majority of weeds are in the 2 to 6 leaf stage. Add DC-Tron or DC-Trate® oil at 1%-2% (i.e. 10-20L oil 1000 L water). Rainfast in 2 hours. Add Correct® or Fusilade® for control of barley, barley grass and brome grass.

HERBICIDES

REMARKS

VERDICT® 520
520g/L haloxyfop-r
Use lower rate for weeds less than 5 leaf stage. Add Uptake® spraying oil or wetting agent. Use at least 30L water/ha. **DO NOT apply if weeds stressed.** Rainfast in 1 hour. See label for details on Verdict® and Select® tank mixes.

TARGA®, TZAR®,
LEOPARD®, ELANTRA®
99.5g/L quizalofop-p-ethyl
Use higher rate for thicker stands of brome or ryegrass. Use at least 50L water/ha. Add wetting agent (at 0.2% active ingredient), or if ryegrass is the main weed add 0.1% wetting agent and 1% mineral crop oil. **DO NOT apply if weeds stressed.** Rainfast in 3 hours.

TARGA® BOLT
TZAR® BOLT
200g/L quizalofop-p-ethyl
Use higher rate for thicker strands of brome or ryegrass. Use at least 50L water/ha. Add wetting agent (at 0.2% active ingredient) or use methylated/ethylated crop oil at 1%. **DO NOT use mineral based oil or non-methylated oils of crop origin.**

SELECT®, SEQUENCE®,
STATUS®
240g/L clethodim
Apply early post-emergence when crops and weeds are actively growing. Add 1% Hasten® or Kwickin® oil or 0.5% -1% Uptake or DC-Trate oil at 2.0%.

PANTERA®
120g/L quizalofop-p-tefuryl
Apply when weeds are actively growing. Use higher rate under heavy weed pressure and/or when weeds have commenced tillering.
Lupins: **DO NOT apply Pantera® after 10% of pods are formed.**
Faba beans: **DO NOT apply Pantera® after pod formation.**

CAUTIONS

- Use of oil with grass herbicides may increase damage from disease in peas.
- If spray equipment has been used for metsulfuron products (such as Associate® & Ally®), chlorsulfuron (such as Glean® & Siege®), triasulfuron (such as Logran®, Nugran®), Atlantis®, Hussar® or Monza®, flush out with chlorine according to recommendations on label before using Targa®, Fusilade®, Fusion®, Sertin®, Sertin Plus®, Correct®, Verdict®, Hoegrass® or Select®.
- After using Affinity®, Broadstrike® or Eclipse® decontaminate with liquid alkali detergent (eg. Drive®, Omo®, Surf®) at 500ml/100L before spraying sensitive crops.
- For recommendations in other states check first with the chemical company, reseller or Dept. of Agriculture.

Labels of most herbicides are in: “Field Crop Herbicide Guide” from the Kondinin Group.

Labels are also on chemical company and the AVPMA (www.apvma.gov.au) websites.

Branched broomrape - a serious parasitic weed

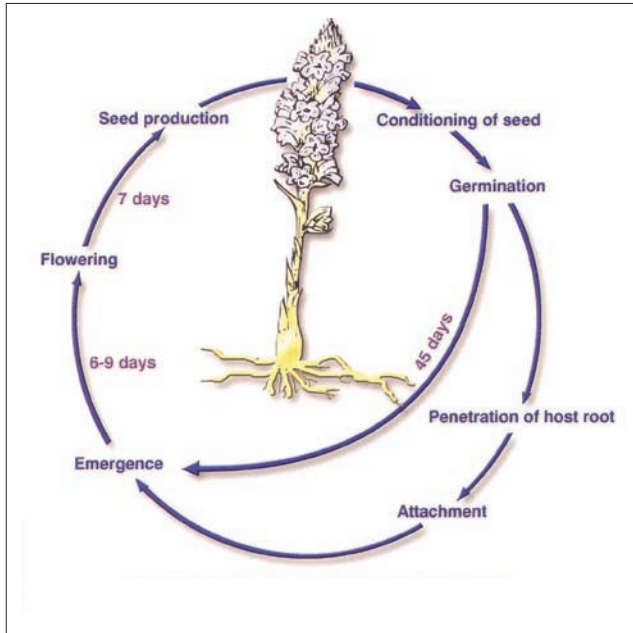


Plate 5:A
Diagram of the life cycle of branched broomrape.



Plate 5:B
Flowering branched broomrape.



Plate 5:C
Seeding branched broomrape on capeweed.

Herbicide damage



Plate 30

High rates of Simazine can damage faba beans . . .
. . . lower leaves turn black and die back from the edge . . .

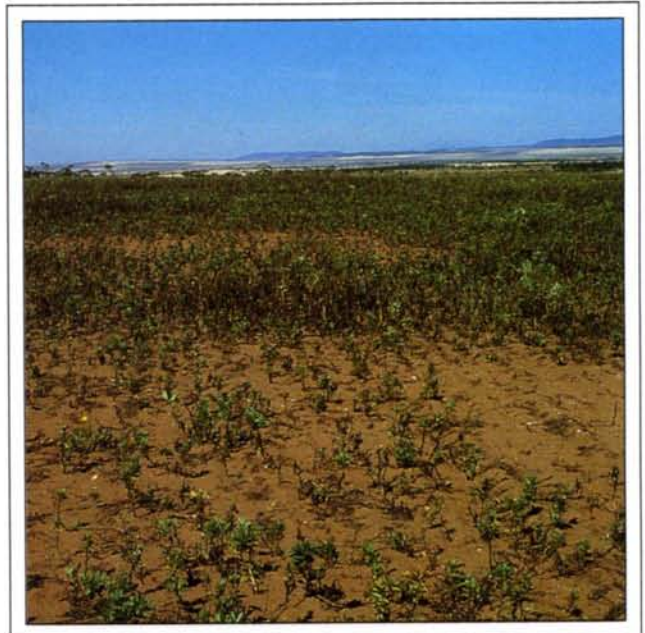


Plate 31

. . . crops grown on lighter soils are more prone
to simazine damage.

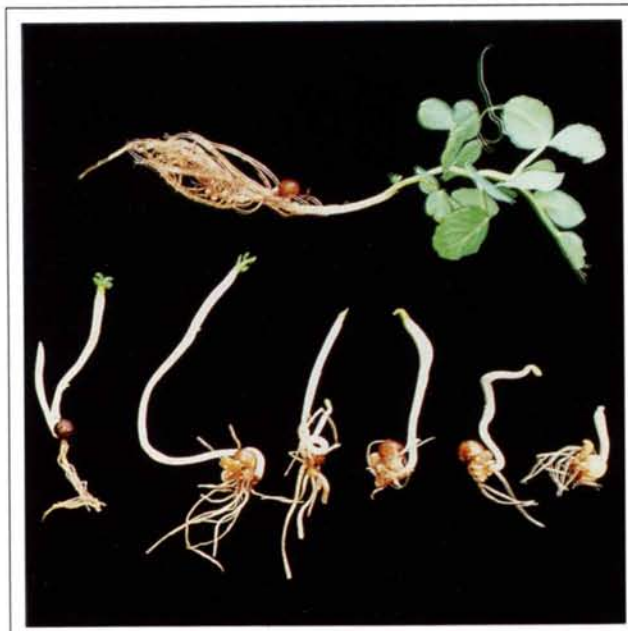


Plate 32

Trifluralin can cause emergence problems in peas. The plant
at the top is unaffected.

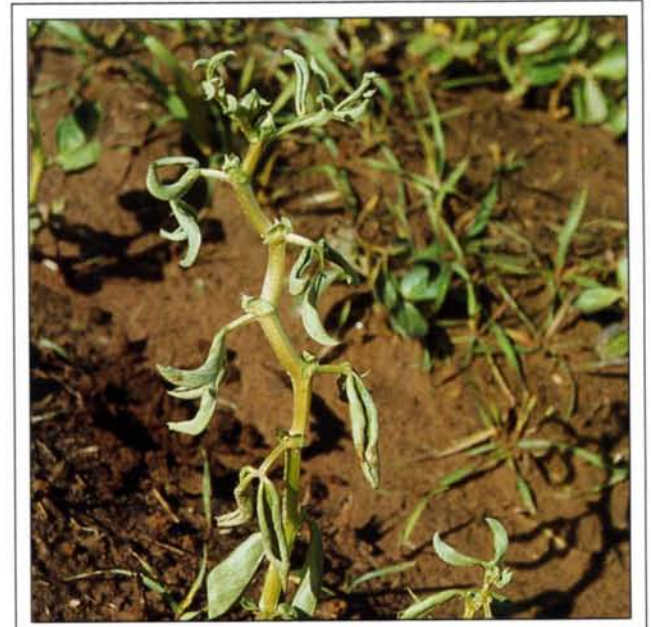


Plate 33

Beans are susceptible to Tordon (R) residue in soil.
Note the stem distortion and severe leaf curl.

Herbicide damage



Plate 34
Chemical residues from previous years can cause problems. Tordon (R) was used here. Plants in the affected area are stunted.



Plate 35
Hygiene between spraying operations is essential. After using Glean (R) or Ally (R) make sure the boom spray is cleaned out with chlorine before starting on grass control in legumes. The effect as shown is dramatic.



Plate 36
Leaf spotting caused by MCPB herbicide can be confused with ascochyta and chocolate spot infections in beans.



Plate 37
Spray drift of 2,4-D ester on beans. Note the narrow leaves with crinkled edges.