

UPDATED 2023

Knockdown and residual weed control that stays where you put it

VALOR® 500WG and VALOR® EZE 480SC are the herbicides for cane and bean growers that stay where you put them. They can either be used with knockdown herbicides to improve burndown control, or at higher rates for long-term residual control.



TECHNICAL MANUAL

Overview

Valor and Valor EZE are both highly flexible Group 14 herbicides developed locally by Sumitomo Chemical Australia. Both are registered for a range of new uses making them suitable for our coastal cropping zones including pre and post-emergence weed control in sugarcane and bean crops, as well as for fallow, fence line and irrigation channel maintenance.

These new uses are in addition to a wide range of already established practices prior to summer crops, sugarcane and as a knockdown spike.

The active ingredient in Valor and Valor EZE has several unique attributes making it one of the most versatile compounds in this group.



Valor WG is available in 1.75 kg and 10.5 kg packs with water-soluble bags in foil outers, offering reduced risk of exposure during mixing.



- Valor contains 500 g/kg of flumioxazin as a wettable granule (WG).
- Valor EZE contains 480 g/L of flumioxazin as a suspension concentrate (SC).
- PPO Group 14 mode of action with zero resistance recorded in Australia to date.
- New fallow establishment and pre-sowing residual registrations prior to winter crops and lucerne.
- Rapid burndown and excellent activity as a knockdown spike.
- Robust long-term residual control of weeds in crop and along fence lines and channel banks.
- Strength against difficult to control weeds
- Compatible with a wide range of knockdown and pre-emergent herbicides.



Valor EZE is available in Easy Pour 10 L drums.

MODE OF ACTION AND CHEMICAL PROPERTIES

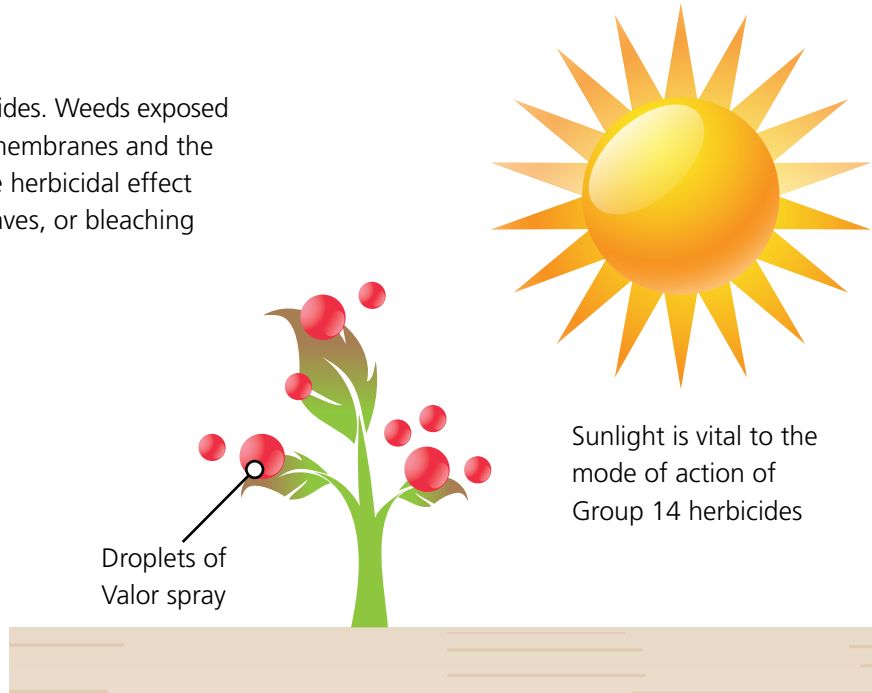
Properties	
Herbicide Mode of Action group	14
MoA	Inhibitor of protoporphyrinogen oxidase (PPOs)
Uptake pathway	Foliar and epicotyl
Systemic activity	None
Speed of action	Rapid
Soil degradation	DT ₅₀ : 17 to 21 days
Volatility	Non-volatile
UV stability	Very stable
Soil mobility	Koc = 889 (slightly mobile)
Mammalian toxicity	Oral LD ₅₀ (mg kg ⁻¹) = >5000 (low risk)

How do Valor and Valor EZE work?

FOLIAR UPTAKE

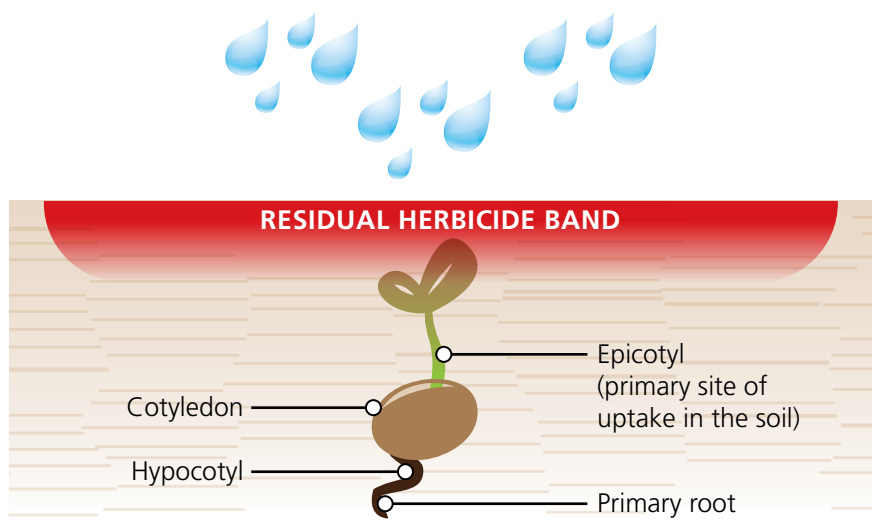
Valor and Valor EZE are Group 14 herbicides. Weeds exposed die because of disruption to plant cell membranes and the subsequent leakage of cell content. The herbicidal effect expresses rapidly as browning of the leaves, or bleaching as it is sometimes referred to.

Brownout is caused by the inhibition of photosynthesis and bleaching of the chloroplasts. Affected leaves turn yellow soon after application, followed by desiccation, necrosis and browning. Sunlight is vital to initiate symptoms and is instrumental to herbicidal efficacy because of its role in the formation of the chemical agent responsible for the cell wall disruption.



RESIDUAL UPTAKE

Residual control occurs as the weeds begin to germinate and the active ingredient is taken up by the epicotyl, where it accumulates. Symptoms then occur as soon as the shoot breaks through the soil surface and is exposed to sunlight. With higher residual rates being used with a knockdown mixing partner, emerged weeds can sometimes suffer antagonism under high light intensity. Germinating weeds will normally not be seen as sunlight filters into the top layer of soil activating the herbicide and killing weeds before they emerge.



Some of the key characteristics of Valor and Valor EZE that make them powerful tools for cane and bean growers include:

VALOR STAYS WHERE YOU PUT IT

Flumioxazin has low solubility in water. The formulation of Valor means this isn't a problem in terms of mixing in the tank and applying the product. The advantage is that once it has been physically moved into the top layer of the soil by rainfall or irrigation, it won't be leached down through the soil profile or end up in local waterways. Valor will only move with soil that is washed away.

ACTIVE	SOLUBILITY (g/L) Higher number means more soluble
Flumioxazin (Valor)	0.8
Trifluralin	0.22
Pendimethalin	0.33
Isoxaflutol	36
Atrazine	35
S-metolachlor	480
Imazapic	2230
Hexazinone	33000

VALOR IS NOT VOLATILE

This means that Valor doesn't need immediate incorporation to stop it from being lost to the atmosphere. It also reduces the likelihood of drift onto other crops when spraying. Valor can also be used as a replacement for 2,4-D in knockdown mixes. Where legume weeds are present adding Valor plus atrazine with a knockdown herbicide will provide excellent control.

VALOR IS UV STABLE

Valor won't be broken down by the sun before it can be incorporated into the top of the soil for at least three weeks.

VALOR CONTROLS A WIDE RANGE OF BROADLEAF AND GRASS WEEDS IN CANE AND BEANS.

Valor treated row after flooding



Valor providing excellent weed control where a trash blanket is present



Valor for enhanced knockdown and long-term residual weed control in cane

SUMMARY OF VALOR LONG-TERM RESIDUAL WEED CONTROL USES IN CANE

Cane, no trash: 350-560 g/ha of Valor WG or 365-380 mL/ha of Valor EZE directed spray after filling in.

Cane, with trash: 560-700 g/ha of Valor WG or 580-730 mL/ha of Valor EZE directed spray.



- 1** The lower range (350-560 g/ha & 365-580 mL/ha) is for use when conditions are favourable for Valor to perform. These conditions include:
- Bare soil – no trash. Trash limits the amount of Valor reaching the soil.
 - High rainfall areas such as the wet tropics or where supplementary overhead irrigation is used and Valor will be more readily incorporated into the soil surface.



Untreated control 85 DAT



Valor WG @ 480 g/ha 85 DAT

- 2** The upper range rates of (560-700 g/ha & 580-730 mL/ha) are used when conditions are a bit tougher. This includes:
- Ratoon crops with a trash blanket that restricts Valor from readily reaching the soil surface.
 - Bare soil with low rainfall or flood irrigation (e.g. the Burdekin region) where Valor is less readily incorporated into the soil surface.



Untreated control 42 DAT



Valor WG @ 560 g/ha + Gramoxone® @ 1.5 L/ha + Hasten™ @ 0.4 L/100 L of water 42 DAT

REGARDLESS OF THE SITUATION, THERE ARE A NUMBER OF POINTS TO CONSIDER TO GET THE MOST OUT OF VALOR WHEN USED FOR RESIDUAL CONTROL IN CANE:

- Valor needs water for activation when used for residual weed control. Valor should be applied to moist soil and requires follow-up rain or irrigation of at least 15 mm within 3 weeks to ensure continued good control.
- Valor can be applied over the trash blanket (at the higher rate), but will need rainfall or irrigation within 1 week of application to take it down to the soil surface and control germinating weeds.
- Apply in a minimum of 200 L spray solution per hectare using droppers with directed nozzles targeted for even coverage up to the base of the cane.
- Application over the top of young cane or young ratoon will cause a temporary burn of the cane.
- Once the Valor layer on top of the soil has been applied, soil movement may allow weed escapes to occur. Soil movement can be from mechanical means, by flood irrigation or flood water washing soil away, or soil cracking.
- The weeds present at the time of spraying will influence the choice of mixing partner. Any weeds with 2-8 leaf will require a non-selective herbicide partner such as Paraquat.
 - If grasses are larger than the 3-leaf stage then adding a low rate of Diuron to the Paraquat will improve knockdown. This needs to be done before the summer period when use of Diuron is restricted.
 - If Calopo or Sicklepod are present then the addition of Atrazine will help.
- Long dry conditions after rain or irrigation can reduce the performance of Valor. In these situations reliability may be improved by adding a lower rate of Valor or Valor EZE to other more water soluble herbicides that move further down into the soil profile such as S-metolachlor, metolachlor or atrazine.



Untreated control 54 DAT



Valor WG @ 400 g/ha + Paraquat @ 1.5 L/ha + Dual Gold® (s-metolachlor) @ 1.8 L/ha+ Hasten @ 0.4 L/100 L of water 54 DAT



Enhanced knockdown of vine and broadleaf weeds in cane

RATE

Cane: 90-120 g/ha of Valor WG or 95-125 mL/ha of Valor EZE plus the label rate of the mixing partner.

SITUATION

Sugarcane: Plant cane - after filling in, or ratoon cane.

WEEDS CONTROLLED (<9 LEAF)

Calopo, Wild rose, Square weed/Borreria, Billygoat weed/Bluetop, Pig weed, Sicklepod, Common sida, Spider flower, *Amaranthus* spp., *Ipomoea* spp., Pink convolvulus, Red convolvulus, Bell vine, Morning glory and Star of Bethlehem.

HOW TO GET THE BEST FROM VALOR WITH NON-SELECTIVE HERBICIDES

- Use as a direct spray at the base of the plant.
- Choose the mixing partner based on the weeds present.
- If Calopo or Sicklepod are present the addition of atrazine may improve knockdown.
- While Valor enhances the knockdown of glyphosate herbicides, care needs to be taken to avoid glyphosate drift onto crops.
- To control vines the growing tip needs to be sprayed.
- Non-ionic surfactants may be used but addition of a crop oil concentrate such as Hasten will generally give a better knockdown result.
- Use as a replacement for 2,4-D in knockdown mixes.

Valor can also be used for enhanced knockdown at 30 g/ha or 30 mL/ha plus label rate of tank mix partner plus an adjuvant prior to sowing beans and other rotational crops.



TRIAL RESULTS

Knockdown control of Calopo, Square weed and Pink convolvulus



Untreated control 14 DAT



**Valor WG @ 120 g/ha +
Atrazine 1350 gai (1.5 kg/ha) +
Hasten @ 0.4 L/100 L of water 14 DAT**



Long-term residual weed control in beans and other rotational crops with cane

Valor provides highly effective long-term weed control in a range of crops commonly grown in rotation with sugarcane at use rates substantially lower than those recommended in cane. Valor offers growers the flexibility to use in cane and rotation crops without restrictive plant-back periods seen with some other herbicides.



Valor is an excellent choice for residual control when applied in fallow 2 months prior to sowing Mungbeans keeping the fallow clean leading up to sowing and often controlling weeds into the emerged crop.



With Soybeans and Peanuts Valor has no re-cropping interval recommendation and can be applied at sowing or immediately post sowing but prior to emergence (PSPE), often keeping the crop clean through until harvest.



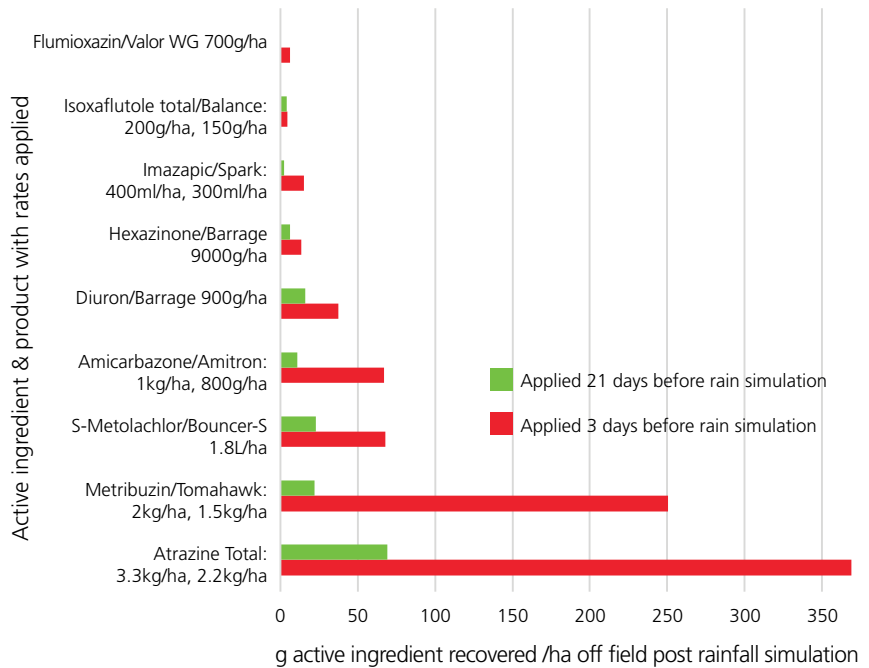
Valor stays where you put it

Recent herbicide run-off simulation trials conducted by Sugar Research Australia (SRA) highlighted that Valor binds very strongly to the soil posing a much lower risk of run-off and contamination to waterways and the reef than other alternative herbicides.

SRA trial at Gordonvale, Qld, 2018, Billing, B

This chart shows runoff from residual herbicides applied at 21 days and 3 days before rainfall simulations carried out to the point of runoff. 100mm of natural rainfall fell between application at 21 days and rainfall simulation. Note Valor's very low level of off field movement, as illustrated by the low recovered active ingredient.

SRA Rainfall simulation trial Bartle Frere 2018



General application guidelines

MIXING AND HANDLING

For ease of use **Valor WG** is conveniently packed into 350 g water soluble sachets, each in an outer foil envelope. Two carton sizes are available, a 1.75 kg carton (including 5 x 350 g sachets) and a 10.5 kg carton (including 6 x 1.75 kg foil envelopes each with 5 x 350 g water soluble bags). Simply tear the foil envelope starting from the notch and empty the contents into the spray tank. Avoid contacting the sachet with wet hands.

When pre-mixing chemicals in a separate mixing vessel, concentration and saturation time might limit the number of sachets that can be added to the vessel at once. Users are advised to add one sachet at a time, while employing strong agitation, to determine the optimal mixing regime.

Valor EZE is packed in 10 L drums and users are advised to keep the agitation system engaged and mix thoroughly until fully dispersed.

WATER PH

Valor and Valor EZE have a reduced half life in high pH water due to alkaline hydrolysis. At pH 8 or above the half life of Valor and Valor EZE can be as low as 2 hours. At pH 7 or below the spray mixture will be stable beyond 24 hours. In the case of high pH water Sumitomo recommend buffering the spray water to pH 7 or below.



DECONTAMINATING SPRAY EQUIPMENT

Equipment with Valor or Valor EZE residue remaining in the system may result in crop injury to a subsequently treated crop.

Spray equipment, including mixing vessels and nurse tanks, must be cleaned following application. After Valor or Valor EZE is applied, it is important to follow the decontamination steps as outlined on the Valor label.

To enhance the effective removal of Valor or Valor EZE from the spray system, add a tank cleaner such as All Clear™ DS or Kleenup™ Granular. DO NOT use ammonia. Follow the instructions on the product label for these products.

All-Clear DS has very detailed instructions on how to achieve effective decontamination.

Scan QR to watch video on decontamination:



RE-ENTRY

Do not enter treated areas until the spray has dried, unless wearing suitable protective clothing. Refer to the registered product label for details.

CHANNEL BANKS AND DRAINAGE DITCH APPLICATION

For application to channel banks and drainage ditches follow the general application guidelines above although make sure channels are completely empty of water at time of application.

COMPATIBILITY

Valor and Valor EZE are highly compatible formulations with no known incompatibilities. The herbicides and adjuvants listed below have been tested and proven as physically and biologically compatible with Valor and Valor EZE. Brand names are used, as alternative products containing the same actives, whilst likely to be compatible, were not tested.

	Compatibility status	
	Valor 500WG	Valor EZE 480SC
Amicide® 500	Yes	
Amicide® Advance 700	Yes	
Avadex® Xtra	Yes	Yes
Atrazine 900WG	Yes	
Balance®	Yes	
Basta®	Yes	
Boxer Gold®	Yes	
BS 1000	Yes	
Clincher® Gold	Yes	Yes
Colex® D		Yes
Crucial®	Yes	Yes
Diuron 900DF	Yes	
Dual® Gold	Yes	Yes
Du-Wett®	Yes	
Factor® WG	Yes	
Flame®	Yes	
Gesaprim® 900WG	Yes	Yes
Gramoxone® 250	Yes	Yes
Gramoxone® 360	Yes	Yes
Hasten®	Yes	Yes
Janitor® 700WG	Yes	
Kwickin®	Yes	
Kyte™ 700 WG	Yes	
LI-700®	Yes	
Nuquat®	Yes	Yes
Roundup® CT	Yes	
Roundup® UltraMAX	Yes	
Roundup® Ready Herbicide	Yes	
Sencor®	Yes	
Status®	Yes	
Simazine 900WG	Yes	
Spinnaker® 700WG	Yes	
Spray.Seed®	Yes	Yes
Stomp®	Yes	
Stomp® Xtra	Yes	
Terbyne® Xtreme	Yes	Yes
Triflur® X	Yes	Yes
UAN		Yes
Uptake® Oil	Yes	
Weedmaster® Duo	Yes	

Products listed and shown to be compatible with Valor EZE have all been tested. It is expected that products proven to be compatible with Valor 500WG will also be compatible with Valor EZE , however, not all product testing has been completed at the time of printing.

Directions for use

DO NOT apply by air.

DO NOT apply for enhanced knockdown if weeds are stressed from drought, frost or waterlogging.

DO NOT apply for residual weed control until the start of summer rains when significant soil wetting rain has occurred (> 15 mm) or the soil has been irrigated.

DO NOT apply in high pH water (pH >7) or allow the spray mix to stand overnight.

DO NOT disturb treated soil surface after application.

DO NOT make more than one application per season at the 700 g/ha maximum rate.

Directions for use – Enhanced knockdown in cane

CROP SITUATION	WEED CONTROLLED	RATE g/sprayed ha	CRITICAL COMMENTS
<p>Sugarcane</p> <p>Plant – after filling in or Ratoons</p> <p>To enhance knockdown of vines and broadleaf</p>	<p>Broadleaf and vines</p> <p><9 leaf stage</p> <p>Including: Calopo, Wild rose, Square weed/Borreria, Billygoat weed/Bluetop, Pig weed, Sicklepod, Common sida, Spider flower, <i>Amaranthus</i>, <i>Ipomoea</i> spp., Pink convolvulus, Red convolvulus, Bell vine, Morning glory, Star of Bethlehem</p>	<p>90-120 g/ha Valor WG or 95-125 mL/ha of Valor EZE plus the label rate of tank mix partner plus an adjuvant</p>	<p>Apply Valor herbicide as a directed spray to the base of the cane plants.</p> <p>Non-ionic surfactants may be used but addition of a crop oil concentrate such as Hasten may give a better result.</p> <p>If Calopo or Sicklepod are present then the addition of atrazine may improve knockdown.</p> <p>To ensure knockdown in vines the growing tip of the weed needs to be sprayed.</p> <p>Valor also enhances the knockdown of glyphosate on broadleaved weeds and vines, but great care must be taken not to allow glyphosate to drift on to cane.</p>



Directions for use – Sugarcane residual weed control

CROP SITUATION	WEED CONTROLLED	RATE g/sprayed ha	CRITICAL COMMENTS
<p>Sugarcane</p> <p>Plant – after filling in or Ratoon – no trash blanket</p> <p>Bare soil situations in higher rainfall areas such as wet tropics or with supplementary irrigation</p> <p>Enhanced knockdown of vines and broadleaf and residual control of vines, broadleaf and grasses</p>	<p>Broadleaf and vines</p> <p><9 leaf stage</p> <p>Including: Calopo, Fleabane, Blackberry nightshade, Wild rose, Square weed/Borreria, Billygoat weed/ Bluetop, Balsam pear, Pig weed, Giant pigweed, Milkweed, Sicklepod, Common sida, Spider flower, Amaranthus, Ipomoea spp., Pink convolvulus, Red convolvulus, Morning glory, Star of Bethlehem</p>	<p>Valor WG 350-560 g/ha or Valor EZE 365-580 mL/ha</p>	<p>Apply Valor herbicide as a directed spray to the base of the cane plants. If existing weeds are present at the 2-8 leaf stage then non-selective herbicides e.g. Paraquat should be added to ensure adequate knockdown. If grasses greater than 3 leaf are present the addition of a low rate of diuron to paraquat will improve knockdown. If Calopo or Sicklepod are present then the addition of atrazine may improve knockdown. Non-ionic surfactants may be used but addition of a crop oil concentrate such as Hasten will generally give a better knockdown result.</p> <p>Valor also enhances the knockdown of glyphosate on broadleaved weeds and vines and then provides on going residual control, but great care must be taken not to allow glyphosate to drift on to cane.</p> <p>A minimum of 200 L/ha of spray mixture is recommended.</p>
<p>Sugarcane</p> <p>Ratoon with trash blanket, or Plant and ratoon with bare soil with low rainfall and flood irrigation e.g. Burdekin area</p> <p>Enhanced knockdown of vines and broadleaf and residual control of vines, broadleaf and grasses</p>	<p>Grasses</p> <p>Summer grass, Green summer grass, Feather top Rhodes grass, Barnyard grass, Crowsfoot</p>	<p>Valor WG 560-700 g/ha or Valor EZE 580-730 mL/ha</p>	<p>Valor herbicide should be applied to moist soil and needs follow up rain or irrigation of at least 15 mm within 3 weeks to ensure continued good control particularly on trash Efficacy may be reduced by:</p> <ul style="list-style-type: none"> - Soil movement - Very thick trash - Flood irrigation or flood water moving top soil or trash - Long dry conditions after rain or irrigation <p>In these situations reliability may be improved by adding a lower rate of Valor to other more water soluble herbicides that move further down in the soil profile such as S-metolachlor, metolachlor or atrazine.</p>



Directions for use – Residual weed control in beans and rotational crops

CROP SITUATION	WEED CONTROLLED	RATE g/sprayed ha	CRITICAL COMMENTS
<p>Soybeans and peanuts</p> <p>Pre-sowing enhanced burndown and residual 210-280 g/ha or 220-290 mL/ha</p> <p>Post Sowing Pre-emergence (PSPE) enhanced burndown and residual 210 g/ha or 220 mL/ha</p>	<p>Wide range of broadleaf and grass weeds 6-8 weeks control</p> <p>Good on shallow germinating wind-blown seeding types like: Feathertop Rhodes grass, fleabane and milk/sow thistle</p>	<p>Valor WG 210-280 g/ha or Valor EZE 220-290 mL/ha</p> <p>If emerged weeds are present apply with glyphosate or paraquat, plus Hasten spray oil</p>	<p>Needs 15 mm rain to activate and incorporate within 3 weeks.</p> <p>For PSPE apply within 2 days of planting as rain at germination can wash chemical in around seed and cause crop damage.</p> <p>Efficacy can be reduced by: Soil movement, trash, big clods and long dry conditions.</p> <p>Can be mixed with other more soluble herbicides like S-metolachlor to improve deep seeded grass control.</p>
<p>Maize and navybeans</p> <p>Late fallow – at least one month prior to sowing enhanced burndown and residual</p>	<p>Some large seeded deep germinating grasses like liverseed and barnyard grass may get through dry surface soil</p> <p>Some deep germinating broadleaved weeds like wireweed and caltrop may germinate through cracks in soil</p>		
<p>Mungbeans</p> <p>Late fallow – at least two months prior to sowing enhanced burndown and residual</p>	<p>These may require follow up application of knockdown herbicides</p>		

WITHHOLDING PERIODS

SUGARCANE: DO NOT GRAZE OR HARVEST FOR 22 WEEKS AFTER APPLICATION.

SOYBEANS, MUNGBEANS, PIGEON PEA AND NAVY BEANS: DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 6 WEEKS AFTER APPLICATION.

MAIZE AND PEANUTS: DO NOT GRAZE OR CUT FOR STOCK FOOD FOR 8 WEEKS AFTER APPLICATION.



Crop rotation recommendations

The following re-cropping intervals apply to crops that may be grown after using Valor. Valor's short re-cropping intervals means it is the ideal choice to use in the final cane ratoon, offering the flexibility to follow with a wide variety of crops.

Minimum plant-back or re-cropping intervals

	CANE RESIDUAL RATES# Valor WG 350-700 g/ha Valor EZE 365-730 mL/ha	ROTATIONAL CROP RESIDUAL RATES Valor WG 210-280 g/ha Valor EZE 220-290 mL/ha
Peanuts	5 months	0 months
Soybeans	5 months	0 months
Maize	*	1 month
Navy beans	*	1 month
Pumpkin	5 months	*
Rice	5 months	*
Shallot	5 months	*
Sweet corn	5 months	*
Mungbeans	8 months	2 months
Cabbage	8 months	*
Capsicum	8 months	*
Lettuce	8 months	*
Sweet potato	8 months	*
Tomato	8 months	*
Zucchini	8 months	*
Rockmelon	12 months	*

* Insufficient data, contact Sumitomo for advice.

The intervals after using in cane are based on the assumption that the soil will be thoroughly cultivated after cane has been grown and before other crops are planted.





For further information on **Valor** in sugarcane or summer pulse crops, please contact:

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