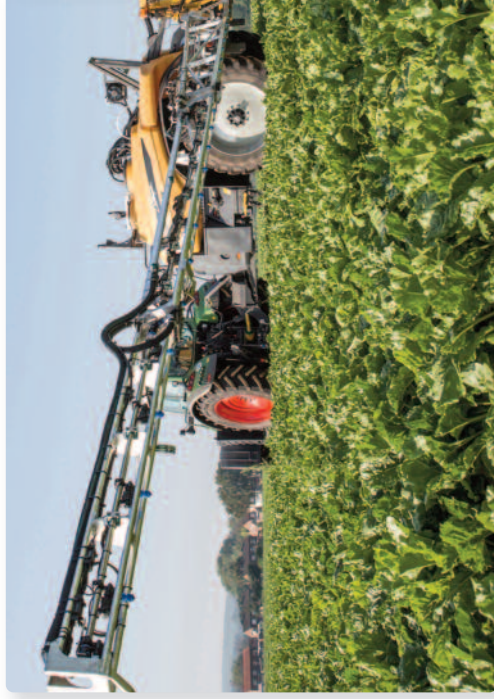


# Pest, weed and disease charts 2018





Updated copies of the BBRO pest, weed and disease charts are available on the BBRO website: [www.bb-ro.co.uk](http://www.bb-ro.co.uk)

The BBRO have created the Pest, Weed and Disease Charts 2018 to help you make informed decisions around protecting your crop from pests, weeds and diseases.

All the enclosed information is based on manufacturers' current recommendations and sponsored work carried out by the British Beet Research Organisation.

**ONLY USE APPROVED PRODUCTS AND ALWAYS READ THE LABEL AND COMPLY WITH THE INSTRUCTIONS.**

Content and format of the BBRO Pest, Weed and Disease Charts is kindly accredited to: Dr Pat Turnbull, Daniel Godsmark and Sarah Flood. The BBRO would like to thank all manufacturers for assisting with the information included in the charts.

### BBRO Plant Clinic

Do you need help in identifying or confirming an issue in your sugar beet crop? We have facilities at our Norwich laboratory and glasshouses for microscopic investigation, germination tests and virus detection.

We would recommend that you submit at least one plant with the surrounding soil and if possible some photos of the surrounding area.

A plant clinic form must be sent with each sample. To download a form please visit: [www.bbpro.co.uk/research/plant-clinic](http://www.bbpro.co.uk/research/plant-clinic)

Please send samples to: **BBRO, Plant Clinic, Innovation Centre, Norwich Research Park, Colney, Norwich, Norfolk. NR4 7GJ.**

Or email your query with photos to: [plantclinic@bbro.co.uk](mailto:plantclinic@bbro.co.uk)



- An aid to the choice of pre-emergence broad-leaved herbicide products approved for use on the UK sugar beet crop following the principles of 'Good Agricultural Practice'.
- This chart is a guide and does not override any statements made in manufacturers' technical literature or on product labels.

**ONLY USE APPROVED PRODUCTS, ALWAYS READ THE LABEL AND COMPLY WITH THE INSTRUCTIONS**

Example products	Oblix MT/ Torero	Bettix Flo SC Goltix 70 SC	Pyramin DF	Fiesta T	Efeckt/ Ethosat 500/Oblix 500	Volcan Combi
Active ingredient	ethofumesate +metamitron	metamitron	chloridazon	chloridazon +quinmerac	ethofumesate	chloridazon +metamitron
Max total dose/ha	2.0l		4.0kg	4.1l		3.0l
Max individual dose/ha		*See note below	1.7kg		*See note below	
Cost guide/ha	£45 / ha		£21 - £50 / ha	£85 / ha		£44 / ha
Annual meadow grass	S	S	S	S	S	S
Annual/small nettle	MS	S	S	S	S	S
Black bindweed	MR	MR	S	MS	S	S
Black nightshade	MS	MR	S	NC	MS	NC
Charlock	S	MS	S	NC	S	S
Chickweed, common	MS	S	S	S	S	S
Cleavers	MS	R	MR	S	S	NC
Common poppy	S	S	S	S	MS	S
Corn marigold	MS	S	S	NC	NC	S
Corn spurrey	MS	S	S	NC	S	S

\* Product rates differ according to timing and tank mix partners, please refer to product labels

S = Susceptible MS = Moderately susceptible MR = Moderately resistant R = Resistant NC = No claim of control

Example products	Oblix MT/ Torero	Bettix Flo SC Goltix 70 SC	Pyramin DF	Fiesta T	Ethosat 500SC/Oblix 500	Efeckt/ Volcan Combi
Creeping thistle	NC	NC	NC	R	NC	NC
Dock, seedling	MS	S	NC	NC	NC	NC
Fat-hen	S	S	S	MS	S	S
Field pansy	S	S	MR	NC	MS	S
Field penny cress	S	S	S	S	MS	S
Field speedwell, common	S	S	S	S	MS	S
Fool's parsley	MR	S	NC	NC	R	S
Forget-me-not	S	S	NC	NC	NC	S
Fumitory, common	S	MS	MS	NC	S	S
Groundsel	S	S	MS	MS	S	S
Hemp-nettle	S	NC	S	NC	S	S
Ivy-leaved speedwell	MS	MS	S	NC	R	S
Knotgrass	S	S	MS	MS	S	S
Mayweed spp	S	S	S	S	S	S
Orache, common	S	S	S	MS	S	S
Pale persicaria	S	MS	NC	MS	S	S
Parsley-piert	NC	NC	NC	NC	NC	S
Red dead nettle	S	MS	MR	MR	R	NC
Redshank	S	MS	S	MS	S	S
Runch	S	MR	NC	NC	S	NC
Scarlet pimpernel	S	MR	MS	R	S	NC
Shepherd's-purse	S	S	S	S	S	S
Sow thistle	NC	NC	MR	NC	S	S
Sun spurge	S	S	MR	NC	NC	NC
Volunteer oilseed rape	NC	S	NC	NC	MS	NC
Volunteer potatoes	NC	NC	NC	NC	NC	NC
White campion	NC	NC	NC	NC	NC	NC

The information is based on manufacturers' current recommendations and from British Beet Research Organisation sponsored work.

**S** = Susceptible **MS** = Moderately susceptible **MR** = Moderately resistant **R** = Resistant **NC** = No claim of control

Please use this chart in conjunction with the Herbicide restrictions chart on page 12.



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## Pre and post-emergence grass weed control

- An aid to the choice of grass weed herbicide products approved for use on the UK sugar beet crop following the principles of 'Good Agricultural Practice'.
- This chart is a guide and does not override any statements made in manufacturers' technical literature or on product labels.

### \* Resistance

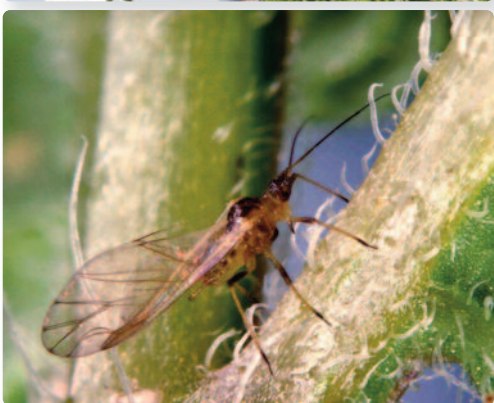
Some strains of annual grasses e.g. black-grass, Italian rye-grass and wild oats have developed resistance to some herbicides, leading to poorer control.  
Please refer to the weed control section for advice on resistant ACCase black-grass situations.

Example Products	Active(s)	Growth Stage of Crop	Strengths and Weaknesses on Grass weeds										Cost guide £ / ha	Rate Range (per ha)		
			AMG	Black-grass *	Bromes	Common couch	Italian rye-grass *	Onion couch	Perennial rye-grass	Rough meadow grass	Volunteer cereals	Wild oat *				
<b>Selective weed control</b>																
<b>Centurion Max</b>	clethodim	Fully expanded cotyledons	S	S	S	NC	S	NC	NC	NC	NC	NC	S	S	£24	1.0l
<b>Efeckt/Ethosat 500/Oblix 500</b>	ethofumesate	Pre and post	S	S	MS	NC	R	NC	R	NC	NC	NC	NC	MS	■ See note below	
<b>Falcon</b>	propaquizafop	2 true leaves	MS	S	S	S	S	NC	NC	S	NC	NC	S	S	£13-£28	0.7-1.5l
<b>Fusilade Max</b>	fluzifop-P-butyl	1 true leaf	NC	S	S	S	S	NC	NC	S	NC	NC	S	S	£22-£66	1.0-3.0l
<b>Bettix Flo SC</b>	metamitron	Pre	S	MR	NC	NC	NC	NC	NC	NC	NC	NC	NC	R	■ See note below	
<b>Golfix 70 SC</b>		Post	S	S	NC	NC	NC	NC	NC	NC	NC	NC	GC	S		
<b>Laser (add oil)</b>	cycloxydim	2 true leaves	R	S	S	S	S	S	S	S	MR	MR	S	S	£18-£82	0.5-2.25l
<b>Panarex</b>	quizalofop-P-tefuryl	2 true leaves	NC	S	NC	S	S	NC	S	S	NC	NC	S	S	£9-£41	0.5-2.25l
<b>Pilot Ultra/Targa Super</b>	quizalofop-p-ethyl	2 true leaves	NC	S	S	S	S	NC	S	S	NC	NC	S	S	£17-£57	0.75-2.5l
<b>Targa Max</b>	quizalofop-p-ethyl	2 true leaves	NC	S	S	S	S	NC	S	S	NC	NC	S	S		0.4-1.25l

Please use this chart in conjunction with the Herbicide restrictions chart on page 12.

■ Product rates differ according to timing and tank mix partners, please refer to product labels

S = Susceptible MS = Moderately susceptible MR = Moderately resistant R = Resistant NC = No claim of control GC = Growth check



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## Post-emergence broad-leaved weed control

- An aid to the choice of post-emergence broad-leaved herbicide products approved for use on the UK sugar beet crop following the principles of 'Good Agricultural Practice'.
- This chart is a guide and does not include all available products and does not override any statements made in manufacturers' literature or on product labels.
- Correct choice and timing of the first post-emergence spray is critical. Use a sequence of sprays which applies:
  - 1) Contact activity to control existing weeds. 2) Residual activity to prevent weeds germinating beyond the final spray application.

Minimum beet crop growth stage	Maximum weed growth stage	Examples of products/actives available see Herbicide restrictions chart on page 11	Rate per hectare	Cost guide per app. £/ha	COMMENTS		
					Strengths	Weaknesses	
No restrictions (after drilling)	Cotyledon	phenmedipham 160g	2.0l to 3.0l	£10 - £14	Charlock		No residual activity, A.M.G, Cleavers, Knotgrass
		phenmedipham 160g + metamitron	1.25l + 1.25l	£30	Mayweed spp, Small nettle, Knotgrass, Pansy, A.M.G.		Cleavers, Black bindweed
		Teamforce + Bettix Flo SC	1.5l + 1.0l	£32	Mayweed spp, Small nettle, Knotgrass, Pansy, Cleavers		
		Betanal Turbo	0.75l	£22	Amaranthus spp, dry and cool weather		No residual activity
		Betanal Turbo + Debut/Shiro + Venzar 500SC	0.5l+10g+0.4l	£28	Brassica spp. E.g Charlock, Runch, Vol. OSR		
		Betanal Turbo + Torero/Obliv MT	0.5l+1.25l	£39	Mayweeds, A.M.G, Polygonum spp. (esp.Knotgrass), Fat-hen. Add oil for use at later growth stages		
		Betasana Trio + oil	1.5 to 2.0l + oil	£21 to £26 + oil	Wide weed spectrum		
		Betanal maxxPro	1.25l	£26	Wide weed spectrum		
		Debut/Shiro + metamitron + phenmedipham 160g	30g+0.5l+1.5l	£39	Mayweed spp, Nettles, Orache, Fat-hen, Brassica spp, Field pansy		Persistence Black bindweed, Fool's Parsley
		phenmedipham 160g + Fiesta T	1.75l + 1.0l	£30	Common poppy, Speedwell spp, Fool's parsley		Needs Fiesta T pre-em for cleaver control
Expanded cotyledons	Expanded cotyledons to just beyond	phenmedipham 160g + Venzar 500SC	1.8l + 0.4l	£20	Black bindweed, Charlock, Vol. OSR – 1 true leaf		A.M.G, Cleavers, Black nightshade
		phenmedipham 160g + metamitron + oil	1.25l+1.25l+oil	£30 + oil	Field pansy, Knotgrass, Vol. OSR – 1 true leaf		Results can be variable
		Teamforce + Venzar 500SC	1.5l+0.4l	£25	Charlock, Vol. OSR – 1 true leaf		
		Betasana Trio + Bettix Flo SC	1.5l+1.0l	£38			
		Betanal maxxPro + Goltix 70 SC	1.25l+1.0l	£44			
		Sniper + Goltix 70 SC	0.75l + 1.0l	£32			
		Debut/Shiro + Venzar 500SC + contact herbicide +/- oil	30g+0.4l+ contact herbicide +/-oil	£32+ contact herbicide + oil	Cleavers (1st whorl), Mayweed spp, Small nettle, Brassica spp, Fool's parsley, Black-bindweed, (+ oil knotgrass)		Pansy

Please use this chart in conjunction with the Herbicide restrictions and useful information chart.

Minimum beet crop growth stage	Maximum weed growth stage	Examples of products/actives available see Herbicide restrictions and useful information chart	Rate per hectare	Cost guide per app.£/ha	COMMENTS		
					Strengths	Weaknesses	
1st pair true leaves at least 1cm long	One true leaf	Sniper + Goltix 70 SC + Dow Shield 400	0.75l + 1.0l + 0.25l	£46	Mayweed spp, Creeping thistle, Vol. Potato	Cleavers, crop damage can be severe during rapid/soft growth	
		phenmedipham 160g + Venzar 500SC + oil	1.8l + 0.4l + oil	£20 + oil	Larger Vol. OSR – two true leaves		
1st pair true leaves fully expanded	Up to expanded cotyledons (one true leaf maximum)	phenmedipham 160g + ethofumesate + Debut/Shiro + Venzar Flowable + metamitron + oil	2.5l + 0.4l + 20g + 0.4l + 0.5l + oil	£52 + oil	Designed as a two spray programme, second application should be timed 14 days after the first. Should the second application be delayed and the weed size increased, the dose of ethofumesate may be increased to 0.8 l/ha and Debut to 30 g/ha.	Beet must not be under stress	
		phenmedipham 160g + ethofumesate	1.8l + 0.6l	£18	Wide spectrum on small weeds		
		phenmedipham 160g + ethofumesate + Dow Shield 400	1.8l + 0.6l + 0.25l	£33	Mayweed spp, Creeping thistle, Vol. Potato		
	Larger than one true leaf (two true leaves maximum)		Betasana Trio + Vivendi 200	1.5 + 0.5	£35	Fire engine option for contact and residual activity	Beet must not be under stress
			Betanal maxxPro + Dow Shield 400	1.25l + 0.25l	£40		
			phenmedipham 160g + ethofumesate	2.5l + 1.0l	£26		
1st pair true leaves fully expanded		Betasana Trio + Debut/Shiro + Venzar 500SC	1.5l + 10g + 0.4l	£38	Do not let Polygonum or Mayweed spp. escape beyond two true leaves		
		Betanal maxxPro + Debut + Venzar 500SC	1.25l + 10g + 0.3/0.4l	£41/£43			
		Betanal maxxPro + Debut + oil	1.25l + 30g + oil	£50 + oil			
		Betanal maxxPro + Debut + Dow Shield 400	1.25l + 20g + 0.25l	£55			
		Betasana Trio + Shiro + Vivendi 200	1.5l + 20g + 0.5l	£48			

### FAR Treatments

Minimum beet crop growth stage	Maximum weed growth stage	Examples of products/actives available see Herbicide restrictions and useful information chart	Rate per hectare	Cost guide per app.£/ha	COMMENTS	
					Rate per hectare	Cost guide per app.£/ha
No restriction	F3-1cm diameter	phenmedipham 160g* + ethofumesate + metamitron 700g (FAR 1st application)	0.5l + 0.2l + 0.5l	£15	Crop safety broad spectrum	
Cotyledon		phenmedipham 160g* + ethofumesate + metamitron 700g + oil (FAR repeat applications)	0.5l + 0.2l + 0.5l + 0.5l	£16	Better weed kill in dry conditions	
2 TL		phenmedipham 160g* + ethofumesate + metamitron 700g + clopyralid 400g/200g	0.5l + 0.2l + 0.5l + 0.125l/0.25l	£23	Wide weed spectrum Vol. potato	Most expensive FAR mixture
	phenmedipham 160g* + ethofumesate + triflusaluron-methyl + lenacil + oil	0.5l + 0.2l + 10g + 0.2l + 0.5l	£20	Good choice for brassica weeds and cleavers on heavy soils		

\*Can be replaced by phenmedipham/desmedipham 80g/80 g at 0.5 l/ha or 160g/160g at 0.25 l/ha. Helpful in \*dry and cool weather.

Post-emergence broad-leaved weed control

Product example	Goltix 70 SC/ Bettix Flo	Fiesta T*	Venzar 500SC*	Ethosat 500* /Efeck/Oblix 500	Betasana SC	Betanal Turbo/ Rifle	Beetup Compact SC	Betanal maxxPro	Sniper	Betasana Trio	Teamforce	Dow Shield 400 /Wendi 200	Debut*/ Shiro*
Active ingredient	contact-residual	residual	residual	contact-residual	contact	contact	contact	contact-residual	contact-residual	contact-residual	contact-residual	foliar translocated	foliar
Rate of Ai per l or kg	metamitron 700g	chloridazon +quinmerac 360g+ 60g	lenacil 500g	ethofumesate 500g	phenmedipham 160g	phenmedipham + desmedipham 160g+ 160g	phenmedipham + desmedipham 80g+ 80g	phenmedipham + desmedipham + ethofumesate + lenacil 60g+47g+ 75g+27g	phenmedipham + desmedipham + ethofumesate 150g+50g+200g	phenmedipham + desmedipham + ethofumesate 75g+15g+115g	phenmedipham + ethofumesate 80g+ 100g	clopyralid 400g/200g	triflurofuron- methyl 500g
Annual meadow-grass	S	S	R	S	R	MS	MS	S	MS	S	S	R	NC
Black bindweed	MR	S	MS	S	MS	S	S	S	S	S	S	MS	MR
Black nightshade	MR	NC	R	MS	NC	S	S	S	S	S	NC	R	MS
Bugloss	S	NC	S	S	S	S	S	S	S	S	S	R	MS
Charlock	MS	NC	S	S	S	S	S	S	S	S	S	R	S
Chickweed, common	S	S	S	S	S	S	S	S	S	S	S	R	S
Cleavers	R	S	R	S	NC	MS	MS	S	S	S	S	R	S
Corn marigold	S	NC	MS	NC	MS	S	S	S	S	S	S	R	S
Corn spurrey	S	NC	S	S	NC	S	S	S	S	S	NC	R	NC
Cranesbill	NC	NC	NC	NC	NC	MS	MS	S	S	S	NC	NC	NC
Creeping thistle	NC	NC	NC	R	NC	NC	NC	NC	NC	NC	NC	S	MS
Dock, seedling	S	NC	NC	R	NC	NC	NC	C	NC	NC	NC	R	MS
Fat-hen	S	S	S	S	MS	S	S	S	MS	S	S	R	MS
Field pansy	S	MS	S	MS	MS	S	S	S	MS	S	S	R	MS
Field penny cress	S	NC	MS	S	NC	S	S	S	S	S	S	R	NC
Fool's parsley	S	S	NC	R	NC	MS	MS	NC	R	R	NC	R	S
Forget-me-not	S	NC	MS	S	NC	S	S	S	S	S	S	R	NC
Fumitory, common	MS	S	S	S	S	S	S	S	S	S	S	R	S
Groundsel	S	S	S	S	S	S	S	S	S	S	S	R	S
Hempnettle	NC	S	S	S	S	S	S	S	S	NC	S	R	S
Ivy-leaved speedwell	NC	S	S	S	NC	S	S	S	S	NC	S	R	S
Knograss	S	S	S	S	MS	S	S	S	MS	S	S	R	MS
Mayweed spp	S	S	MS	S	MR	S	S	S	MS	S	S	R	S
Orache, common	S	S	S	S	S	S	S	S	MS	S	S	R	MS
Pale persicaria	MS	S	MS	S	S	S	S	S	S	S	S	MR	S
Parsley-piert	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	R	NC
Poppy, common	S	NC	S	S	S	S	S	NC	S	NC	NC	R	MS
Red dead nettle	S	NC	S	S	NC	S	S	S	MS	S	S	R	S
Redstank	MS	NC	MS	S	NC	S	S	S	S	S	S	MR	S
Runch	MR	NC	S	S	NC	S	S	S	S	S	S	R	MS
Scarlet pimpernel	MR	NC	S	S	S	S	S	S	S	S	S	R	S
Shepherd's-purse	S	NC	S	S	S	S	S	S	S	S	NC	R	NC
Small nettle	S	S	S	S	NC	S	S	S	MS	NC	S	R	S
Sow thistle	NC	NC	R	NC	NC	NC	NC	NC	NC	NC	NC	S	MS
Speedwell field, common	S	S	S	S	NC	S	S	S	S	S	R	R	S
Sun spurge	S	NC	NC	S	NC	NC	NC	NC	NC	NC	NC	R	S
Volunteer oilseed rape	NC	NC	S	NC	NC	NC	S	S	MS	S	NC	R	S
Volunteer potatoes	NC	NC	NC	NC	NC	NC	NC	NC	MS	NC	NC	S	M
White campion	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	R	NC

S = Susceptible MS = Moderately susceptible MR = Moderately resistant R = Resistant NC = No claim of control

\*When used with phenmedipham

Yield effect - One tall weed/m<sup>2</sup> can reduce crop yield by 10%!



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### Restrictions on herbicide actives

Active	Example products*	Restriction
chloridazon	Fiesta T, Pyramin DF, Volcan Combi	A maximum total dose of 2.6 kg/ha of chloridazon may only be applied every third year on the same field.
clopyralid	Dow Shield 400, Vivendi 200	In all cases applications should be completed by end of June.
ethofumesate	Betanal maxxPro, Betasana Trio, Efeckt, Ethosat 500, Oblix 500, Oblix MT, Sniper, Teamforce, Torero	A maximum permitted total dose of 1.0 kg/ha of active over a three year period on the same field.
ACCase inhibitor herbicides	Centurion Max, Falcon, Fusilade Max, Laser, Panarex, Pilot Ultra/Targa Super, Targa Max	Apply only one ACCase inhibitor herbicide to reduce risk of resistance developing. Only use a second (different) ACCase inhibitor to control different weeds at different timings.

**This chart is a guide and does not override any statements made in manufacturers' technical literature or on product labels.**

\* May contain more than one active

### Using Mineral Oils: Vary the dose according to temperatures below

Maximum temperature (°C) on the day of spraying	Dose of oil (l/ha)
Up to 14	1.0
14-18	0.75
18-21	0.5
Above 21	no oil recommended

Always check product labels to confirm rates or contact your agronomist.

### Broad leaved weed control products

Product	Formulation	Max No. Apps.	Max Ind. Dose l or kg ha/yr	Max Total Dose l or kg ha/yr	Active	g ai/l or kg	Active	g ai/l or kg	Active	g ai/l or kg	Active	g ai/l or kg	Active	g ai/l or kg	LERAP	Water Volume l/ha	Spray Quality
Beetup Compact SC	SC	NS	2.0	6.0	desmedipham	80	phenmedipham	80							B	100	
Beetup Flo/Betasana SC	SC	NS	3.0	6.0		160	phenmedipham	160							B	80-100	
Betanal maxxPro	OD	NS	1.5	4.5	desmedipham	47	phenmedipham	60	ethofumesate	75	lenacil	27			-	80-200	Fine
Betanal Turbo	EC	NS	1.0	3.0	desmedipham	160	phenmedipham	160							B	80-100	Fine
Betasana Trio	SC	NS	2.5	7.0	desmedipham	15	phenmedipham	75	ethofumesate	115					-	100-300	
Bettix Flo SC	SC	NS	3.0	5.0	metamitron	700									-	80-200	
Debut/Shiro	WG	4	*30g	-	triflusalufuron-methyl	500									B	80-150	Fine
Dow Shield 400	SL	NS	0.5	0.75	clopyralid	400									-	200-250 /80-100	Medium
Efeckt/Oblis 500 (Pre-em)	SC	NS	2.0	2.0											-	200-400	
Efeckt /Oblis 500 (Post-em)		NS	0.6	1.2					ethofumesate	500					-		
Ethosat 500	SC	NS	2.0	2.0											-	80-100	Fine
Fiesta T (Pre-em)	SC	NS	4.1	4.1	chloridazon	360						quinmerac	60		-	200-240	Medium
Fiesta T (Post-em)		4	1.0	4.0												150-200	Fine
Glotron 700 SC	SC	2.0	5.0		metamitron	700										80-200	Fine/Medium
Goltix 70 SC	SC	NS	2.0	5.0	metamitron	700									-	80-100	Fine
Pyramin DF (Pre-em)	WG	1	4.0	-	chloridazon	650									-	100	Medium
Rifle	SE	NS	1.0	3.0	desmedipham	160	phenmedipham	160							B	80-100	Fine
Safari Lite WSB	WG	2	*280g	-	triflusalufuron-methyl	54									B	80-150	Fine
Sniper	SE	NS	1.3	3.9	desmedipham	50	phenmedipham	150	ethofumesate	200					B	at least 100	Fine
Teamforce	EC	NS	3.0	9.0		80	phenmedipham	80	ethofumesate	100					-	200-400	
Torero/Oblis MT	SC	NS	2.0	6.0	metamitron	350									-	80-100	
Venzar 500SC (Post-em)	SC	NS	0.4	1.0	lenacil	500									B	200	Medium
Vivendi 200	SC	NS	1.0	1.5	clopyralid	200									-	see label	
Volcan Combi (Pre-em)	SC	1	3.0	3.0	chloridazon	300					metamitron	280			-	220-450	Medium

**SC**=Suspension concentrate **EC**=Emulsifiable concentrate **OD**=Oil dispersion **WG**=Water dispersible granules **SL**=Soluble concentrate **NS**=Not specified **SE**=Suspo-emulsion

\* = **WG** rate in grams

## Grass weed and weed control products

Product	Formulation	Max No. Apps.	Max Ind. Dose l or kg ha/yr	Active	g ai l or kg	Water Volume l/ha	Spray Quality
Centurion Max	EC	1	1.0	clethodim	120	200	
Falcon	EC	1	1.5	propaquizafop	100	100/200	Fine/Medium
Fusilade Max	EC	1	3.0	fluazifop-P-butyl	125	80/500	Fine/Medium
Laser	EC	1	2.25	cycloxydim	200	200	Fine/Medium
Panarex	EC	1	2.25	quizalofop-P-tefuryl	40	200	Medium/Coarse
Pilot Ultra/Targa Super	SC	1	2.5	quizalofop-p-ethyl	50	see label	Fine/Medium
Targa Max	EC	1	1.25	quizalofop-p-ethyl	100	see label	Fine/Medium

The information is based on manufacturers' current recommendations and from British Beet Research Organisation sponsored work.

EC=Emulsifiable concentrate SC=Suspension concentrate

### Pest Control - Insecticidal seed treatments

Product	Active(s)	g ai/l	Cost Guide £/unit	TARGET										
				Springtails	Millipedes	Symphylids	Pygmy Beetle	Wireworm	Aphid Vectors	Virus Yellows	Capsids	Leaf Miners		
Cruiser Force	thiamethoxam / tefluthrin	600 / 200	£36.70	****	****	****	****	****	****	****	****	****	****	****
Poncho Beta	clothianidin / beta-cyfluthrin	400 / 53	£32.37	****	****	****	****	****(*)	****	****	****	****	****	****

\*\*\*\* Excellent

### Pest Control - Slugs

Example Products	Active	% w/w	Pellet type	Max total dose kg/ha	Typical dose per application kg/ha	Active applied g/ha	Baiting points /m <sup>2</sup>
Allure	metaldehyde	1.5	Dry process hybrid	22.5	4.0	60	40
Appeal	metaldehyde	1.5	Wet process	22.5	4.0	60	80
Gusto 3	metaldehyde	3.0	Wet process	23.0	3.5	105	49
Lynx H	metaldehyde	3.0	Wet process hybrid	23.3	6.0	180	54
SluXX HP	ferric phosphate	2.97	Wet process	28.0	5.0	150	47
Super 3 Mini	metaldehyde	3.0	Dry process	23.0	7.0	210	35

\* From any combination of metaldehyde products, 700g is also the statutory limit.

For further information and advice visit:  
[www.getpelletwise.co.uk](http://www.getpelletwise.co.uk)

### Metaldehyde Stewardship Guidelines - Best Practice Advice

- No pellets to be allowed to fall within a minimum of 10 meters of any field boundary or watercourse.
- Use minimum active per ha to avoid drainage and run-off losses.
- Maximum application rate 210g metaldehyde a.i/ha\*. For additional protection of water suppliers/BASIS advisers may recommend rates reduced to 160g a.i/ha or less\*.
- Maximum total dose from 1st August to 31st December: 210g metaldehyde a.i/ha\*. For additional protection of water, suppliers/BASIS advisers may recommend rates reduced to 160g a.i/ha or less\*.
- Maximum total dose rate: 700g metaldehyde a.i/ha/calendar year\*.
- Do not apply when heavy rain is forecast.
- If drains are flowing do not apply metaldehyde based slug pellets.



- An aid to the choice of insecticide products approved for use on the sugar beet crop following the principles of 'Good Agricultural Practice'.
- This chart is a guide and does not override any statements made in manufacturers' technical literature or on product labels.

### Pest Control - Insecticides

Example Products	Max No. Apps.	Max ind Dose	Max Total Dose l or kg ha/yr	Min App Interval (Days)	Active	g ai l or kg	HI	LERAP/ Aquatic buffer zone	Cost guide*	Target	Comments
<b>CythrIn 500EC</b>	2	50ml/ha	100ml/ha	10	cypermethrin	500g/l	14 days	18m♦	£2/ha	Caterpillar Cutworm	♦Horizontal boom sprayers must be fitted with three star drift reduction technology for all uses.
<b>Decis Forte</b>	NS	75ml/ha	75ml/ha	NS	deltamethrin	100g/l	30 days	7m non reducible	£7/ha	Flea beetle	For the control of flea beetle, apply at the first signs of damage. Avoid spraying within 5m of the field boundary.
<b>Decis Protech</b>	NS	500ml/ha	500ml/ha	NS	deltamethrin	15g/l	30 days	7m non reducible	£11/ha	Flea beetle	For the control of flea beetle, apply at the first signs of damage. Avoid spraying within 5m of the field boundary.
<b>Fury 10EW</b>	NS	125ml/ha	250ml/ha	10	zeta-cypermethrin	100 g/l	60 days	A	£5/ha	Cutworm	Apply at egg hatch and repeat no sooner than 10 days later.
<b>Hallmark Zeon</b>	NS	75ml/ha	150ml/ha	NS	lambda-cyhalothrin	100 g/l	56 days	B	£6/ha	Flea beetle Mangold fly larvae Cutworm	
<b>Vydate 10G</b>	1	30g per 100m row	-	-	oxamyl	100 g/kg	At drilling	-	£52/ha	Free living nematodes (docking disorder)	Growers must comply with the Nematicide Application Protocol regarding product stewardship guidance and training requirements. For the safe effective use of Vydate 10G see Dupont UK website for details. When applying nematicides it is advised that growers follow the guidance in the Nematicide Stewardship Programme. For information on Vydate stewardship, and practical advice on usage and calibration please see <a href="http://www.cropprotection.dupont.co.uk">www.cropprotection.dupont.co.uk</a> for details.

\*Cost guide is per application.

The information is based on manufacturers' current recommendations and from British Beet Research Organisation sponsored work.

Only use approved products, always read the label and comply with the instructions

- An aid to the choice of fungicide products approved for use on the UK sugar beet crop following the principles of 'Good Agricultural Practice'.
- This chart is a guide and does not override any statements in manufacturers' technical literature or on product labels.

Product	Max No. Apps.	Max Ind. Dose l or kg ha/yr	Max Total Dose l or kg ha/yr	Active (triazole)	g ai l or kg	Active (strobilurin)	g ai l or kg	Active (other)	g ai l or kg	HI (days)	LERAP	Cost guide £/ha*	Water Volume l/ha	Spray Quality
<b>Armure</b> ■	2	0.6	NS	difenoconazole propiconazole	150 150					21	B	£25/ha	200-300	Medium
<b>Difure Pro</b>		0.6	1.2	difenoconazole propiconazole	150 150					21	B	£25/ha	200-300	Medium
<b>Escolta</b> ●	2	0.35	NS	cyproconazole	160	trifloxystrobin	375			21	B	£28/ha	200-400	Medium
<b>Fortress</b>	2	0.3	0.4					quinoxifen	500	28	B	£19/ha	200-400	Medium
<b>Opera</b>	2	1.0	NS	epoxiconazole	50	pyraclostrobin	133			28	B	£28/ha	200-400 (dense crops)	
<b>Priori Xtra</b>	2	0.9	1.8	cyproconazole	80	azoxystrobin	200			36	-	£33/ha	200-400	Medium
<b>Rubric</b>	2	0.75	1.5	epoxiconazole	125					28	B	£11/ha	200	Medium

- Do not apply before BBCH growth stage 40 (crop cover complete: leaves cover 100% of ground).
  - Do not apply before BBCH 31. If a second application is required this must not be made before BBCH 40. Leave a minimum interval of 21 days between applications.
- \*Cost guide is per application.  
**NS** = Not stated

- Correct application water volumes and nozzle selection are important
- High water volumes are better for the treatment of dense crops
- Lower water volumes other than stated on the product label may not be supported by the product manufacturer
- Always read the label and seek advice from a qualified advisor

### Fungicide Restrictions

Example products	Restriction
<b>Escolta, Opera, Priori Xtra,</b>	These products contain an active from the QoI cross resistance group. Apply preventatively rather than curatively. Use an ICM strategy incorporating other methods of control, including fungicides with a different mode of action.

The information is based on manufacturers' current recommendations and from British Beet Research Organisation sponsored work.

Product Example	Powdery Mildew	Rust	Ramularia	Cercospora
Armure	✓	✓	✓	✓
Escolta	✓	✓	✓	✓
Fortress	✓	X	X	X
Furlong	✓	✓	✓	✓
Opera	✓	✓	✓	✓
Priori Xtra	✓	✓	✓	✓
Rubric	✓	✓	✓	✓

Stemphylium	
<b>When:</b>	July to September
<b>Symptoms:</b>	Disease starts with small, discrete, irregular yellow spots (0.5-2 mm across). The spots begin to die from the centre forming brown spots 1-3 mm across. Heavily infested leaves die and more yellow spots appear on new leaves. Progressive leaf loss follows in August to September with subsequent yield loss.
<b>Risk:</b>	Wet summers (high humidity) and other stress factors (e.g. BCN or low pH).
<b>Severity:</b>	22% to 42% yield loss shown in Dutch trials
<b>Advice:</b>	Send leaf samples to the Plant Clinic for identification. If stemphylium is confirmed in your crop, assess the extent of the disease. The fungicide Opera (28 day HI) has been shown to have an incidental effect on stemphylium.

Rust	
<b>When:</b>	July onwards.
<b>Symptoms:</b>	Small orange/brown pustules on leaf surface, later defoliation occurs after frost.
<b>Risk:</b>	Damp conditions and temperatures between 15-22°C. Low resistance variety.
<b>Severity:</b>	Up to 10-14% yield reductions.
<b>Advice:</b>	Treat as soon as disease appears, this is usually mid August to mid September but can be earlier.

Cercospora leaf spot	
<b>When:</b>	Mid July to October
<b>Symptoms:</b>	Circular spots 3-5mm in diameter with necrotic, tan-grey coloured centres and reddish-brown border. Spots coalesce, leading to severe defoliation.
<b>Risk:</b>	Warm wet weather, with temperatures above 25°C.
<b>Severity:</b>	Low at moment, but may become more of a problem with the increase in annual summer temperatures. In other countries yield losses can exceed 50%.
<b>Advice:</b>	Current fungicide programmes used in the UK are providing adequate control of cercospora.

Powdery Mildew	
<b>When:</b>	July to early autumn.
<b>Symptoms:</b>	Grey mould on crop, starting on outer leaves.
<b>Risk:</b>	Mild winters, dry and warm conditions. Low resistance variety.
<b>Severity:</b>	By far the most yield damaging foliar disease in sugar beet, in the UK. Early infections can reduce yields by up to 20%.
<b>Advice:</b>	Apply first foliar spray at the end of July/early August as soon as disease infection is seen.

Ramularia	
<b>When:</b>	Mid to late autumn.
<b>Symptoms:</b>	Angular leaf spots with central silvery cells and sometimes a dark outer margin on older leaves. Spots are larger than those of cercospora.
<b>Risk:</b>	Cooler (17-20°C) and wet conditions.
<b>Severity:</b>	Usually very low.
<b>Advice:</b>	Rarely worth applying fungicides against ramularia alone, but if it is part of a multiple infection then control is achieved by the use of triazole or triazole plus strobilurin fungicides.

British Beet Research Organisation  
Innovation Centre  
Norwich Research Park  
Colney Lane  
Norwich, NR4 7GJ

General enquiries	<a href="mailto:bbro@bbro.co.uk">bbro@bbro.co.uk</a>	01603 672169
Dr Mark Stevens	<a href="mailto:mark.stevens@bbro.co.uk">mark.stevens@bbro.co.uk</a>	07712 822194
Dr Simon Bowen	<a href="mailto:simon.bowen@bbro.co.uk">simon.bowen@bbro.co.uk</a>	07718 422717
Daniel Godsmark	<a href="mailto:daniel.godsmark@bbro.co.uk">daniel.godsmark@bbro.co.uk</a>	07850 369849
Plant Clinic	<a href="mailto:plantclinic@bbro.co.uk">plantclinic@bbro.co.uk</a>	01603 672169



[www.bbro.co.uk](http://www.bbro.co.uk)

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