



Crop Protection options - 2026

BBRO have collated the following pesticide control options 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. The range and status of products is constantly changing, it is therefore not possible to ensure every product is represented.

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

BBRO would like to thank all manufacturers for assisting with the information included in the charts which are deemed correct as of the 1st March 2025.

BBRO Plant Clinic

Do you need help identifying or confirming a problem with your sugar beet crop?



We have facilities in our Norwich laboratory and glasshouses for a range of diagnostic tests from microscopic investigation of foliar diseases, virus detection, beet cyst nematode identification and germination tests.

The Plant Clinic enquiry form can be downloaded from the website at <https://bbro.co.uk/research/plant-clinic/> or using the QR code above. Please send enquiries with photographs to plantclinic@bbro.co.uk. We will assess your problem and advise you on what samples to send to the lab.

Please send samples to:

BBRO, Plant Clinic, Centrum, Norwich Research Park, Colney, Norwich. Norfolk. NR4 7UG.

Crop hygiene crucial

Green bridging of pests, diseases and viruses is clearly a challenge to sugar beet, as it is to other crops on the farm. As our climate changes and our pesticide armoury is reduced further, new and changing pest and disease portfolios and pressures can be expected in the UK. Improving our biosecurity against pests, diseases and viruses, therefore, should become a higher priority and a core element of our integrated crop protection strategies. Hopefully, this article provides a few facts on which you can act, but successful implementation on the farm requires attention to detail, training and great communication to ensure there can be a successful team approach.

- 🍷 **minimise harvester losses** to reduce potential sources of regrowth
- 🍷 **monitor spoil heaps** and destroy any growth
- 🍷 **eliminate groundkeepers**
- 🍷 **stop aphids green-bridging virus** destroy winter cover crops at least 5 weeks before you drill
- 🍷 **control crop volunteers and virus-hosting weeds** with well-timed herbicides and cultivations



Weed control

Actives for pre and post-emergence applications

Active(s)	Product examples	Residual	Contact	Pre-emergence	Post-emergence	HRAC (2020)	Strengths
Single Actives							
Clopyralid	Shield Pro, Vivendi 200, Clayton Cocoon		✓		✓	4	Black-bindweed, Mayweeds, Thistles, Volunteer potatoes,
Ethofumesate	Efeckt, Ethofol, Oblix 500	✓	✓	✓	✓	15	Annual meadow grass, Black-bindweed, Chickweed, Cleavers, Fat hen, Knotgrass, Orache
Lenacil	Venzar 500SC	✓			✓	5	Black-bindweed, Brassica species, Knotgrass, Persicaria
Metamitron	Bettix Flo, Target Flo, Defiant SC, Goltix 70 SC, Glotron 700 SC, Clayton Neutron	✓	✓	✓	✓	5	Annual meadow grass, Fat hen, Knotgrass, Mayweeds, Orache, Small nettle
Phenmedipham	Beetup Flo, Betasana SC		✓		✓	5	Black-bindweed, Charlock, Fat hen, Ivy-leaved speedwell
Triflusalufuron-methyl	Debut, Shiro, Kaskad		✓		✓	2	Brassica species, Cleavers, Fool's parsley, Mayweeds
Mixtures							
Formasulfuron	CONVISO one		✓		✓	2	Broad spectrum, BLW and grassweeds
Thiencarbazone-methyl		✓	✓		✓	2	
Phenmedipham	Betanal Tandem Powertwin		✓		✓	5	Annual meadow grass, Black-bindweed, Charlock, Chickweed (common), Cleavers, Fat-hen, Ivy-leaved speedwell, Knotgrass, Orache (common)
Ethofumesate		✓	✓		✓	15	
Metamitron +	Goltix Titan	✓	✓	✓	✓	5	Annual meadow grass, Fat hen, Knotgrass, Mayweeds, Orache, Poppy, Small nettle
Quinmerac		✓		✓	✓	4	
Dimethenamid-p +	Topkat, Tanaris	✓			✓	15	Annual meadow grass, Cleavers, Cranesbill, Fool's parsley, Ivy-leaved speedwell, Poppy, Shepherd's purse
Quinmerac		✓			✓	4	
Metamitron +	Oblix MT	✓	✓	✓	✓	5	Annual meadow grass, Fat hen, Knotgrass, Mayweeds, Orache, Small nettle, Black-bindweed, Chickweed, Cleavers.
Ethofumesate		✓	✓			15	

Post-emergence herbicide systems

System	Components	Management	Weed size	Flexibility
Standard managed approach	Contact + Residual	(High) Selected for weeds present	Expanded cotyledon Pre-em often used	10 - 14 days between sprays
FAR	F - Phenmedipham A - Activator R - Residual Low rates	(Low) Some input on later sprays	Early cotyledon	Meticulous timing every 7 (early on) to 10 days
'Active' - manufacturer programmes	Formulated products - several a.i's + residual	(Medium) Broad spectrum	Early cotyledon	Flexible Wider spray window
Broadacre	Triflurosulfuron-methyl + high rates contact & residuals	(Medium) Broad spectrum, ivy-leaved speedwell	First true-leaves 1cm	Aim to use 2 'big hits' 14 days apart
Conviso® SMART	ALS Herbicide tolerant variety Conviso One herbicide	(medium) Broad spectrum	2-4 leaves of fat-hen	Flexible

Pre-emergence selective broad-leaved weed control

- ▶ Use this chart as 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 Volcano	Goltix 70 SC Bettix Flo Target Flo Defiant SC	Efeckt Oblix 500 Ethofol	Goltix Titan	Argosy/Beaufort/ Mohawk CS /Siritaki CS
Active ingredient	ethofumesate + metamitron	metamitron	ethofumesate	quinmerac + metamitron	clomazone
Max total dose/ha	6.0l	5.0l	2.0l	3.0l	0.20l
Max individual dose/ha	2.0l	2.0l* 3.0l**	2.0l	3.0l	0.20l
Annual meadow grass	S	S	S	S	NC
Annual/small nettle	MS	S	S	S	NC
Black bindweed	MR	MR	S	NC	MS
Black nightshade	MS	MR	MS	MR	MS
Charlock	S	S	MS	MS	NC
Chickweed, common	MS	S	S	MS	MS
Cleavers	MS	R	S	MS	S
Common poppy	S	S	MS	NC	NC
Corn marigold	MS	S	NC	S	NC
Corn spurrey	MS	S	S	S	NC
Creeping thistle	NC	NC	NC	NC	NC
Dock, seedling	MS	S	NC	S	NC
Fat-hen	S	S	S	S	MR
Field pansy	S	S	MS	MS	NC
Field penny cress	S	S	MS	S	NC
Field speedwell, common	S	S	MS	S	NC
Fool's parsley	MR	S	R	S	NC
Forget-me-not	S	S	NC	S	NC
Fumitory, common	S	MS	S	MR	NC
Groundsel	S	S	S	S	MS
Hemp-nettle	S	NC	S	NC	NC
Ivy-leaved speedwell	MS	MS	R	MS	NC
Knotgrass	S	S	S	NC	NC
Mayweed spp	S	S	S	S	NC
Orache, common	S	S	S	S	NC
Pale persicaria	S	MS	S	MS	NC
Parsley-piert	NC	NC	NC	NC	NC
Red dead nettle	S	MS	R	S	NC
Redshank	S	MS	S	MS	NC
Runch	S	MR	S	NC	NC
Scarlet pimpernel	S	MR	S	S	NC
Shepherd's-purse	S	S	S	S	MS
Sow thistle	NC	NC	S	NC	R
Sun spurge	S	S	NC	S	NC
Volunteer oilseed rape	NC	S	MS	S	NC
Volunteer potatoes	NC	NC	NC	NC	NC
White campion	NC	NC	NC	NC	NC

* Goltix 70 SC

** Bettix Flo, Target Flo, Defiant SC

Product rates differ according to individual product labels.

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

Herbicide resistance in grass weeds

Herbicide resistance affects black-grass, Italian ryegrass, wild-oats and bromes. Levels of resistance are most widespread in black-grass and susceptible black-grass is very rare particularly where herbicides are used in the rotation. In Italian ryegrass the main type of resistance encountered is enhanced metabolism with some ACCase target site and ALS target site present.

There are three types of resistance:

Enhanced metabolism – sometimes known as non-target site resistance. Herbicides are detoxified by the plant. This is the most common mechanism in grass weeds in the UK and affects most herbicides to varying degrees, but complete loss of control is rare. Levels tend to increase slowly.

ACCase target site – This blocks the site of action specific to ‘fop’, ‘dim’ and ‘den’ herbicides (HRAC group 1). It can often result in poor control and can increase rapidly.

ALS target site – this blocks the site of action of sulfonylurea and related herbicides (HRAC group 2). It can often result in poor control and is increasing rapidly.

Resistant grass weed control in sugar beet

- ▶ Sugar beet provides an excellent rotational opportunity to target grass weeds such as black-grass and Italian ryegrass.
- ▶ Do you know if the grass weeds are resistant to herbicides?
- ▶ Have you seen a gradual decline in control over several years, after spraying are healthy plants found next to dead ones?
- ▶ Collect seed and send to ADAS for testing.

Aim for an integrated approach utilising cultivations and herbicides in the wide window between harvest of the previous crop and drilling the sugar beet crop. Plan your cultivations - Where are the seeds in the seedbank profile? Was the previous crop clean or dirty? Are you cultivating to bury weed seeds or are you bringing them up to the surface?

After harvest allow black-grass seedlings to chit and remove them before cultivating.

Apply glyphosate prior to preparation of the final seedbed. The optimum timing for spraying is one to two leaves with the minimum dose rate of glyphosate at 540g ai/ha. If applied to tillered plants this should increase to a minimum 720g ai/ha with 1080g ai/ha glyphosate recommended for well established plants. A maximum of 2 applications should be made to a stale seed bed to reduce the risk of resistance development. Avoid repeat applications of glyphosate to surviving weeds. Manage survivors with an alternative method of control, such as cultivation. Avoid applications of glyphosate during the stem extension phase of growth as activity is likely to be compromised. Kyleo (glyphosate + 2,4-D) can be used before establishing sugar beet and will be useful on difficult weeds that are not always adequately controlled by glyphosate alone. Allow 28 days between application and drilling. Kyleo 3.0 l/ha + glyphosate is also a supported tank mix. For more information please refer to WRAG 'Guidelines for minimising the risk of glyphosate resistance in UK'.

Consider using a pre-emergence herbicide of ethofumesate (500g ai/ha) + metamitron (1400g ai/ha). This rate allows for holding some ethofumesate in reserve for post-emergence applications. Resistant grass weeds are most susceptible to pre-emergence herbicides but conditions need to be moist for maximum effectiveness.

There is a maximum total permitted dose of ethofumesate of 1000g ai/ha over a 3-year period on the same field.

Post emergence sprays should target small grass weeds (1-2 leaves) and effectiveness decreases as weeds begin to tiller. Mixtures containing triflurosulfuron-methyl (HRAC group 2), metamitron (HRAC group 5) and ethofumesate (HRAC group 15) have shown useful black-grass control. Post-emergence graminicides such as Laser are most likely to be affected by herbicide resistance. Currently the graminicide, clethodim (e.g. Centurion Max), is less affected by herbicide resistance than other

Herbicide resistance in grass weeds

HRAC group 1 herbicides as it is affected much more by the Aspartate-2078-Glycine mutation, which is still relatively rare in the UK compared to the more common Isoleucine-1781-Leucine mutation.

- ▶ Apply glyphosate pre-drilling to remove black-grass prior to seedbed preparation.
- ▶ Consider using pre-emergence sprays of ethofumesate and metamitron.
- ▶ Post-emergence treatments containing triflusaluron-methyl (e.g. Debut/Shiro/Kaskad) and ethofumesate appear to show useful increased control of sensitive strains of black-grass (limited data).
- ▶ In your overall programme aim to combine at least 2-4 different modes of action.
- ▶ Target post-emergence black-grass control at small plants (1 to 3 leaf stage). Control is dramatically reduced once black-grass plants have begun to tiller.
- ▶ Clethodim can provide useful control of black-grass.

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.

Example products	Active(s)	Growth Stage of Crop	sAMG	Black-grass**	Brome spp.	Common couch	Italian rye-grass*	Onion couch	Perennial rye-grass***	Rough meadow grass	Volunteer cereals	Wild oat*	Rate Range (per ha)
Selective weed control													
Centurion Max	clethodim	Fully expanded cotyledons	S	S	MS	NC	S	NC	NC	NS	S	S	1.0l
Select Prime													* 0.75l
Balistik													
VextaDim 240 EC*													
Efeckt	ethofumesate	Pre and post	S	S	MS	NC	R	NC	R	NC	NC	MS	*1.0 - 2.0l
Ethol													
Oblix 500													
Falcon	propaquizafop	2 true leaves	MS	S	S	S	S	NC	S	NC	S	S	0.7-1.5l
Fusilade Max	fluzifop-P-butyl	1 true leaf	NC	S	S	S	S	NC	S	NC	S	S	1.0-3.0l
Goltix 70 SC	metamitron	Pre	S	MR	NC	NC	NC	NC	NC	NC	NC	R	*
Bettix Flo		Post	S	S	NC	NC	NC	NC	NC	GC	S		
Target Flo													
Defiant SC													
Laser (+ oil)	cycloxydim	2 true leaves	R	S	S	S	S	S	S	MR	S	S	0.5-2.25l
Oblix MT	metamitron + ethufumesate	Pre and post	S	S	MS	NC	NC	NC	NC	NC	NC	NC	*
Panarex Rango	quizalofop-P-tefuryl	2 true leaves	NC	S	NC	S	S	NC	S	NC	S	S	0.5-2.25l
Pilot Ultra/Targa Super	quizalofop-p-ethyl	2 true leaves	NC	S	S	S	S	NC	S	NC	S	S	0.75-2.5l
Targa Super													0.8-2.5l
Targa Max	quizalofop-p-ethyl	2 true leaves	NC	S	S	S	S	NC	S	NC	S	S	0.4-1.25l
Conviso One ****	Foramsulfuron + thiencazabone	4 true leaves	S	S	NC	S	S	NC	S	S	S	S	1.0l

* Product rates differ according to timing and tank mix partners, please refer to product labels
** 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.
*** From seed only
****Conviso® One only to be used on Conviso® Smart varieties
- = Susceptible MS = Moderately susceptible MR = Moderately resistant R = Resistant NC = No claim of control GC = Growth check

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 regarding tank mixes 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	Rate per hectare	COMMENTS	
				Strengths	Weaknesses
No restrictions (after drilling)	Cotyledon	Betasana SC	2.0l to 3.0l	Charlock, black-bindweed, fat hen, ivy leaved speedwell	No residual activity, AMG, cleavers, knotgrass
		Betasana SC + Efeckt + metamitron	0.5 +0.2 + 0.5	Safe to crop and broad spectrum	Holding spray only
		Betasana SC + metamitron	1.5l +1.0l	Common chickweed, black-bindweed Mayweed spp, small nettle, knotgrass, pansy, AMG	Use as a holding spray
		Betanal Tandem + Oil	1.0/ha + 1.0l/ha	Speedwell + Fat hen	
		Betasana SC + Venzar 500 SC	1.75l +0.4l	Black-bindweed, charlock, Vol. OSR – 1 true leaf	AMG, cleavers, black nightshade
Expanded cotyledons	Expanded cotyledons to just beyond	Betasana SC + metamitron + Efeckt + oil	2.0 +1.0 + 0.3	Broad spectrum	Volunteer potatoes, thistles
		Betasana SC + metamitron + oil	1.75l +1.5l	Field pansy, knotgrass, Vol. OSR – 1 true leaf	Results can be variable
		Debut/Shiro + Venzar 500 SC + Betasana SC or Efeckt + oil	20g + 0.4l + 1.5l or 0.4	Cleavers (1st whorl), mayweed spp, small nettle, brassica spp, fool's parsley, black-bindweed, knotgrass	Pansy
		Tanaris/Topkat	0.3 fb 0.6 fb 0.6	Annual meadow grass, cleavers, poppy, dead nettle, speedwells, fool's parsley, crane s-bill, black nightshade	Black-bindweed, pansy, fumitory, knotgrass, shepherd's purse, fat hen, charlock, volunteer OSR
		Tanaris/Topkat + metamitron	0.3+1.0 / 0.6+1.0 / 0.6+1.0	Additional to above; mayweeds, shepherd's purse, fumitory, fat hen	Annual mercury, black-bindweed

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 hectre	COMMENTS	
				Strengths	Weaknesses
1st pair true leaves at least 1cm long	One true leaf	metamitron + Shield Pro/Vivendi 200 + oil	1.0l + 0.25l/0.5l	Mayweed spp, creeping thistle, vol potatoes	Cleavers, crop damage can be seen during rapid / soft growth
		Betasana SC + Venzar 500SC + oil	2.0l + 0.4l	Larger Vol. OSR – two true leaves	
		Betasana SC + Effekt + Debut/Shiro + Venzar 500SC + metamitron + oil	2.5l + 0.4l + 20g + 0.4l + 0.5l	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 0.8l/ha and Debut to 30g/ha	
1st pair true leaves fully expanded	From expanded cotyledons (one true leaf maximum)	Betasana SC + Effekt	2.0l + 0.4l	Wide spectrum on small weeds	
	Larger than one true leaf (two true leaves max)	Betasana SC + Effekt + Dow Shield 400/ Vivendi 200	1.5l + 0.6l +0.25/0.5l	Mayweed spp, creeping thistle. For vol. potatoes the first application should be made when the potato shoots are between 5-10cm tall, with a follow up 7-14 days later	Beet must not be under stress
		Betanal Tandem + Oil	1.5l/ha + 1.0l/ha	Speedwell + Fat hen	
4 leaves	4 leaves	Betasana SC + Effekt	3.0l + 0.6l	Fire engine option for contact and residual activity	Do not let polygonum or mayweed spp. escape beyond two true leaves
		CONVISO One	1.0l	Broad spectrum, Weed beet, Polygonums, Brassicac* (*not Clearfield Vol OSR)	Speedwell

FAR Treatments		Maximum weed growth stage	Examples of products/actives available see Herbicide restrictions and useful information chart	Rate per hectare	COMMENTS	
Minimum beet crop growth stage						
No restriction	Cotyledon	Emergence -1cm diameter	Betasana SC + Effekt + metamitron (FAR 1st application)	0.5l + 0.2l + 0.5l	Crop safety broad spectrum	
			Betasana SC* + Effekt + metamitron + oil (FAR repeat applications)	0.5l + 0.2l + 0.5l + 0.5l	Better weed kill in dry conditions	
			Betasana SC + Effekt + metamitron g + Dow Shield 400/Vivendi 200		0.5l + 0.2l + 0.5l + 0.125l/0.25l	Wide weed spectrum Vol. potatoes
2 TL			Betasana SC + Effekt + Debut/Shiro + Venzar 500 SC + oil	0.5l + 0.2l + 10g +0.2l + 0.5l	Good choice for brassica weeds and cleavers on heavy soils	

* Helpful in dry and cool weather.

Post-emergence broad-leaved weed control

Product example	Goltix 70 SC / Bettix Flo/ Defiant SC/ Target Flo	Venzar 500SC	Efeckt / Oblix 500/ Ethofol	Betasana SC / Beetup Flo	Shield Pro/ Vivendi 200/ Clayton Coccon	Debut*/Shiro/ Kaskad*	Goltix Titan	Tanaris / Topkat	Betanal Tandem/ Powertwin	CONVISO One
	Contact-residual	Residual	Contact-residual	Contact	Foliar translocated	Foliar	Contact-residual	Residual	Contact-residual	Contact-residual
Active ingredient	metamitron	lenacil	ethofumesate	phenmedipham	clopyralid	triflusalufuron-methyl	quinmerac + metamitron	dimethenamid-p + quinmerac	phenmedipham + ethofumesate	Foramsulfuron Thiencarbazone-methyl
Rate of AI per l or kg	700g	500g	500g	160g	400g/200g	500g	40g + 525g	333g +167g	200g + 190g 200g + 200g	50g + 30g
Annual meadow-grass	S	R	S	R	R	NC	S	MS	S	S
Black bindweed	MR	MS	S	MS	MS	MR	R	R	S	S
Black nightshade	MR	R	MS	NC	R	MS	S	MS	NC	S
Bugloss	S	S	S	S	R	MS	NC	NC	S	MS
Charlock	MS	S	S	S	R	S	NC	MR	S	S
Chickweed, common	S	S	S	S	R	S	S	MS	S	S
Cleavers	R	R	S	NC	R	S	S	S	S	S
Corn marigold	S	MS	NC	MS	S	S	NC	MR	S	NC
Corn spurrey	S	S	S	NC	R	NC	NC	S	NC	NC
Cranesbill	NC	NC	NC	NC	NC	NC	NC	S	NC	S
Creeping thistle	NC	NC	R	NC	S	MS	NC	NC	NC	MR
Dock, seedling	S	NC	R	NC	R	MS	NC	NC	NC	S
Fat-hen	S	S	S	MS	R	MS	MR	MR	S	S
Field pansy	S	S	MS	MS	R	MS	MS	R	S	S
Field penny cress	S	MS	S	NC	R	NC	MS	S	S	S

Fool's parsley	S	NC	R	NC	R	S	R	S	R	S	NC	S
Forget-me-not	S	MS	S	NC	R	NC	R	NC	NC	MS	S	S
Fumitory, common	MS	S	S	S	R	S	R	S	R	R	S	S
Groundsel	S	S	S	S	S	S	S	S	S	MS	S	S
Hempnettle	NC	S	S	S	R	S	R	S	NC	S	S	S
Ivy-leaved speedwell	NC	S	S	NC	R	S	R	S	NC	MS	S	MS
Knotgrass	S	S	S	MS	R	MS	R	MS	R	R	S	S
Mayweed spp	S	MS	S	MR	S	S	S	S	NC	MR	S	S
Orache, common	S	S	S	S	R	MS	R	MS	S	MR	S	S
Pale persicaria	MS	MS	S	S	MR	S	MR	MS	NC	MS	S	S
Parsley-piert	NC	NC	NC	NC	R	NC	R	NC	NC	MS	NC	NC
Poppy, common	S	S	S	S	R	MS	R	MS	NC	S	NC	S
Red dead nettle	S	S	S	NC	R	S	R	S	S	S	S	S
Redshank	MS	MS	S	NC	MR	S	MR	S	S	MS	S	S
Runch	MR	S	S	NC	R	MS	R	MS	NC	R	S	S
Scarlet pimpernel	MR	S	S	S	R	S	R	MR	NC	MR	S	S
Shepherd's-purse	S	S	S	S	R	NC	R	MR	S	MR	NC	S
Small nettle	S	S	S	NC	R	S	R	MR	NC	MR	NC	S
Sow thistle	NC	R	NC	NC	S	MS	S	MS	NC	MS	NC	S
Speedwell field, common	S	S	S	NC	R	S	R	S	S	MS	S	MR
Sun spurge	S	NC	S	NC	R	S	R	S	NC	NC	NC	NC
Volunteer oilseed rape	NC	S	NC	NC	R	S	R	S	NC	R	NC	S*
Volunteer potatoes	NC	NC	NC	NC	MS-S	MS	MS-S	MS	NC	NC	NC	MR**
White campion	NC	NC	NC	NC	S	NC	S	NC	NC	NC	NC	NC

* CONVISO One will not control Clearfield

** Will control haulm growth only

This table includes both label claims and supplementary data provided by manufacturers.

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

*When used with phenmedipham

Yield effect - One tall weed/m²
can reduce crop yield by 10%!

Herbicide restrictions and useful information

Restrictions on herbicide actives

Active	Example products*	Restriction
ACCCase inhibitor herbicides: Propaquizafop, Cycloxdim, Quizalofop-P- tufuryl, Quizalofop-p-ethyl, Fluazifop-P-butyl, Clethodim)	Centurion Max, Falcon, Fusilade Max, Laser, Panarex, Pilot Ultra, Targa Super, Targa Max, Balistik, Select Prime	Apply only one ACCCase inhibitor herbicide to reduce risk of resistance developing. Only use a second (different) ACCCase inhibitor to control different weeds at different timings.
Clethodim	Centurion max, Balistik, Select Prime, Vextadim 240 EC, Lightening, Varsity, Buccaneer, Gauntlet	No spray periods: A 5 day no spray period for any herbicide before clethodim application and a 14 day no spray period for herbicides post clethodim application.
Clopyralid	Shield Pro, Vivendi 200	In all cases applications should be completed by end of June.
Ethofumesate	Efeckt, Ethofol, Oblix 500, Oblix MT, Torero, Volcano, Betanal Tandem, Powertwin	A maximum permitted total dose of 1.0 kg/ha of active over a three year period on the same field.
Lenacil	Only applies when using Venzar 500SC. Bear in mind other products containing lenacil when using Venzar 500SC	A maximum total dose of 500g/l lenacil per hectare may only be applied every third year on the same field.

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

Active Ingredient	Voluntary Initiative (VI) / Stewardship
Quinmerac	Quinmerac has been detected in drinking water sources - unless care is taken to reduce the risks to water then this is at serious risk of restricted use. Quinmerac is highly mobile so good practice during filling, cleaning out and application to prevent field losses from run-off. Follow VI best practice to protect water- Fill sprayer in a banded area and clear up any spills immediately. Ensure there is a 6m grass buffer strip next to water courses. Wash sprayer down in the field or in a banded area. Do not apply when soils are cracked, dry or saturated. Do not apply if heavy rainfall is expected within 48 hours of application or drains are flowing. Maximum dose: 250g quinmerac/ha - lower dose rates reduce the risk of movement to water, when applied in combination with other herbicides can give equivalent control.
CONVISO One (Thiencarbazone-methyl + formasulfuron)	Requires a 10-metre aquatic buffer zone Mark and record each variety location, thorough cleaning out of the drill is essential when switching between varieties. Plan for bolter removal from every field. Thorough cleaning of the tank between Conviso One and conventional sprays is essential. Ploughing is recommended following a Conviso Smart sugar beet crop. Monitor groundkeepers that are showing signs of new growth and use a non-ALS-based herbicide to treat them.

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

Adjuvant oils

- Can improve weed control.
- Are of most benefit when weeds are large or 'waxy'.
- Should always be used as recommended on the label.
- Can increase risk of crop damage when beet are under stress.
- As temperatures increase, so does the risk of damage.

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

Herbicide restrictions and useful information

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	LERAP	Water Volume l/ha	Spray Quality	Active	g ai/l or kg	Active	g ai/l or kg
Betanal Tandem	SC	3	1.5	4.0	-	80-100	Fine	phenmedipham	200	ethofumesate	190
Betasana SC, Beetup Flo	SC	NS	3.0	6.0	B	80-100	Fine	phenmedipham	160		
Bettix Flo/Defiant SC/Target Flo	SC	NS	3.0	5.0	-	80-200	Fine	metamitron	700		
Convviso One	OD	1	1.0	1.0	-	150-300	Fine/medium	foramsulfuron	50	thiencarbazone-methyl	30
Debut/Shiro/Kaskad	WG	4	*30g	-	B	80-150	Fine	triflusalufuron-methyl	500		
Efeckt/Oblix 500 (Pre-em)	SC	NS	2.0	2.0		200-400	Fine	ethofumesate	500		
Efeckt /Oblix 500 (Post-em)		NS	0.6	1.2		80-100	Fine	ethofumesate	500		
Glotron 700 SC	SC	NS	2.0	5.0		80-200	Fine/Medium	metamitron	700		
Goltix 70 SC	SC	NS	2.0	5.0	-	80-100	Fine	metamitron	700		
Goltix Titan (Pre-em)		1	3.0	3.0	-	80-200	Medium	quinmerac	40	metamitron	525
Goltix Titan (Post-em)		3	1.0	3.0	-	80-200	Medium	quinmerac	40	metamitron	525
Goltix Titan (Post-em ONLY)		3	2.0	6.0	-	80-200	Medium	quinmerac	40	metamitron	525
Powerwin	SC	3	1.3	3.9	-	80-100	Fine	phenmedipham	200	ethofumesate	190
Shield Pro	SL	NS	0.5	0.75	-	200-250/80-100	Medium	clopyralid	400		
Tanaris/Topkat	SE	NS	0.6	1.5	B	150-300	Medium	dimethenamid-P	333	quinmerac	167
Torero/Oblix MT/Volcano	SC	NS	2.0	6.0	-	80-100	Fine	metamitron	350	ethofumesate	150
Venzar 500SC	SC	NS	0.4	1.0	B	200	Medium	lenacil	500		
Vivendi 200	SL	NS	1.0	1.5	-	200-300/80-100	Medium	clopyralid	200		

SC=Suspension concentrate **WG**=Water dispersible granules **SL**=Soluble concentrate **NS**=Not specified **SE**=Suspo-emulsion **OD**= oil dispersal
* = **WG** rate in grams

Grass weed control products

Product	Formulation	Max No. Apps	Max Ind. Dose l or kg ha/yr	Active	g ai l or kg	Harvest Interval	Water Volume l/ha	Spray Quality
Centurion Max /Balistik/Select Prime	EC	1	1.0	clethodim	120	56 days	Min 150	Fine/Medium
Conviso One	OD	1	1.0	foramsulfuron + thien- carbazono-methyl	50+30	-	150-300	Fine/Medium
Falcon	EC	1	1.5	propanquizafop	100	60 days	100 - 200	Fine/Medium
Fusilade Max	EC	1	3.0	fluzafop-P-butyl	125	56 days	80 - 500	Fine/Medium
Lightning /Varsity/ Buccaneer/Gauntlet	EC	1	0.7	clethodim	180	56 days	200-400	Fine/Medium
Laser	EC	1	2.25	cycloxydim	200	56 days	100-330	Fine/Medium
Panarex/Rango	EC	1	2.25	quizalofop-P-terfuryl	40	60 days	Min 150	Medium/Coarse
Pilot Ultra/Targa Super	SC	1	2.5	quizalofop-p-ethyl	50	60 days	100 - 400	Fine/Medium
Targa Max	EC	1	1.25	quizalofop-p-ethyl	100	60 days	100 - 400	Fine/Medium
VextaDim 240 EC	EC	1	0.75	clethodim	240	BBCH31*	200-400	Fine/Medium
A lower water volume of 100l/ha may be used to control barley cover crops in sugar beet when used as part of a broad leaved weed control low dose/low volume programme								
EC = Emulsifiable concentrate SC= Suspension concentrate OD= Oil dispersion								

*Beginning of crop cover/leaves cover 10% of ground
This information is based on manufacturers' current recommendations and from British Beet Research Organisation sponsored work.

Pest Control

Pest Control - Insecticidal seed treatments and granules

Product	TARGET						
	Springtails	Symphylids	Millipedes	Pygmy Beetle	Free-living Nematodes	Aphid vectors /Virus yellows	
Force ST	*	*	*	*		None	
Nemguard-DE					*		*Efficacy

SLUGS

Defra suggest the use of pesticides containing ferric phosphate, though BBRO are unable to comment on its efficacy.

Pest Control - Insecticides

Example Products	Max. No Apps.	Max ind Dose	Max Total Dose I or kg ha/yr	Min App Interval (Days)	Active	g ai I or kg	HI	LERAP/ Aquatic buffer zone	Target	Comments
Affinto	1	0.14kg/ha	0.14kg/ha	NS	flonicamid	500g/kg	60 days	-	Black bean aphid, peach potato aphid	
Cythrin Max EC	2	50ml/ha	100ml/ha	10	cypermethrin	500g/l	14 days	18m ♦	Caterpillar, cutworm	♦ Maintain 3 star operating conditions until 30m from the top of the bank of any surface water bodies
Decis Protech	NS	500ml/ha	500ml/ha	NS	deltamethrin	15g/l	30 days	7m non reducible	Flea beetle	For the control of flea beetle, apply at the first signs of damage. Avoid spraying within 5m of the field boundary. 200l/ha.
Hallmark Zeon Stealth/Warrior	2-4	75ml/ha	150ml/ha	7	lambda cyhalothrin	100 g/l	56 days	B	Flea beetle, man-gold fly, cutworm.	200l/ha volume. Up to 4 doses if rate reduced.
Insyst	1	250g/ha	250g/ha	28	acetamiprid	200g/l	28 days	B	Peach potato aphid	Up to 12 true leaves, threshold for treatment is 1 green wingless aphid per 4 plants. From 12 - 16 true leaves the threshold increases to 1 green wingless aphid per plant. Water volume 200-600l/ha
Kendo/Kung Fu Kusti/Ninja	2-4	150ml/ha	300ml/ha	7	lambda cyhalothrin	50gl	56 days	B	Flea beetle, man-gold fly, cutworm	200l/ha volume. Up to 4 doses if rate reduced.
Sivanto Prime	1	125ml/ha	125ml/ha	NS	flupyradifurone	200g/l	-	-	Aphid group	Apply up to nine true leaves unfolded. (BBCH 19). Water volume 150-300l/ha. No application after 13th July.
Teppeki	1	140g/ha	NS	21	flonicamid	500g/kg	60 days	-	Black bean aphid, peach potato aphid	Spray upon reaching threshold of 1 wingless green aphid per 4 plants. Applications at 6-8 true leaf stage, generally May-June. Min 200l/ha. Water volume 200-500l/ha

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

Disease control

► 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 (sulphur)	Active (triazole)	g ai l or kg	Active (strobilurin)	g ai l or kg	Active (SDHI)	g ai l or kg	HI	Water Volume l/ha	Spray Quality
Angle, Priori Gold	2	1	NS		difenoconazole	125	azoxystrobin	125			35	200-400	Medium
Caligula	1	1.2	1.2		prothioconazole	125			fluopyram	125	7	200-300	Medium
Kumulus DF, SOLFA	2	10	NS	sulphur							End Aug	Min 250	Medium
Microthiol Special	2	10	NS	sulphur		800					End Sept	200-600	Medium
Revystar XE	2	1.0	NS		mefentrifluconazole	100			fluxapyroxad	47.5	28	150-400	Medium
Thiopron (be aware of buffer zone restrictions)	2	9.7	NS	sulphur		825					NS	200-600	Medium
Twist	2	0.25	NS				Trifloxystrobin			500	21	min 200	Medium

Fungicide Restrictions

Example products	Restriction	NS =Not stated
Angle	These products contain an active from the Qol 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.	
Caligula	Note stewardship conditions No stem vegetables for 1 year, no beet tops fed to livestock Do not apply before 1st September	

IMPORTANT: Check health and safety requirements carefully and use appropriate PPE and follow guidance for use. Product requirements differ.

CHECK LIST

- 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

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

Product Example	Powdery Mildew	Rust	Ramularia	Cercospora
Angle/ Priori Gold	✓	✓	✓	✓
Caligula	✓	✓	✓	✓
Revystar XE	✓	✓	✓	✓
Sulphur (e.g. Kumulus, Microthiol, Thiopron)	✓	✗	✗	✗
Twist	✗	✓	✗	✗

★ Potential decrease in efficacy of some products, if resistant strains are present

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

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

Cercospora leaf spot	
When:	Mid July to October
Symptoms:	Circular spots 3-5mm in diameter with necrotic, tan-grey coloured centres and reddish-brown border. Spots coalesce, leading to severe defoliation.
Risk:	Warm wet weather, with temperatures above 25°C.
Severity:	With warmer summers, the risk of cercospora in the UK is increasing, especially following rainfall which creates a combination of warm temperature and high humidity in the canopy.
Advice:	Limited efficacy of some fungicides due to developing resistance.

Stemphylium	
When:	July to September
Symptoms:	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.
Risk:	Wet summers (high humidity) and other stress factors (e.g. BCN or low pH).
Severity:	22% to 42% yield loss shown in Dutch trials
Advice:	Send leaf samples to the Plant Clinic for identification. If stemphylium is confirmed in your crop, assess the extent of the disease.

Ramularia	
When:	Mid to late autumn.
Symptoms:	Angular leaf spots with central silvery cells and sometimes a dark outer margin on older leaves. Spots are larger than those of cercospora.
Risk:	Cooler (17-20°C) and wet conditions.
Severity:	Usually very low.
Advice:	Current fungicide programmes used in the UK are providing adequate control.



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1st April 2025 to 31st May 2025 2 points CP/146524/2425/g

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