Weed control in sugar beet – 'What should it cost?'

(to be used in conjunction with the BBRO Reference book)

Black bindweed and fat hen control in 2025

Weed pressure was high at both BBRO weed trial sites in 2025, with black bindweed dominating at Navenby, Lincolnshire, and fat hen proving the major challenge at Brettenham, Norfolk**.**

At Navenby, black bindweed levels exceeded **60 plants/m²**, alongside orache, knotgrass and field pansy. Meanwhile at Brettenham, extremely high populations of fat hen were recorded, with densities of **over 140 plants/m²**, clearly visible in drone imagery from the site shown opposite. (Photo.1 Blackthorn Arable Ltd)

A total of **16 herbicide programmes** were tested at both locations, including new active ingredients and standard commercial approaches, with each programme replicated four times. The most effective treatments and their costs (£/ha) are shown in the table below.

At Navenby, where drilling took place on **26 March**, the **addition of lenacil at the T2 and T3 timings** to a standard programme delivered the strongest and most commercially acceptable weed control. Applications were made on **17 April, 28 April and 7 May**. Any weeds that remained were small and unlikely to compete with the crop or affect yield.

At Brettenham, final weed counts were **not commercially acceptable**, largely because the crop canopy remained **open until late in the season**. In hindsight, an additional **T4 spray**, and possibly a **T5 application**, would have been justified. **Conviso® One** performed well at Brettenham and delivered the **highest level of weed control**. However, its performance was **not significantly different** from the best conventional programme, which included **ethofumesate, phenmedipham, metamitron and lenacil**. Adding a further spray using conventional chemistry would have increased programme costs by approximately **£55/ha**. The cost of using a SMART variety was not included in the calculations, this would have added a further **£250/ha** and should be considered if weed beet are not an issue.

Treatment	Total Weeds/m² on final assessment		Rates L/ha	Cost £/ha
	Navenby (Heath	Brettenham (Breck)		
ETO + PMP + MTM + Oil ETO + PMP + MTM + Oil ETO + PMP + MTM + Oil	15	67	0.3 + 2.0 + 1.0 + 0.5 0.3 + 2.0 + 1.0 + 0.5 0.3 + 2.0 + 1.0 + 0.5	£120
ETO + PMP + MTM + Oil ETO + PMP + MTM + Lenacil + Oil ETO + PMP + MTM + Lenacil + Oil	7.33	42	0.3 + 2.0 + 1.0 + 0.5 0.3 + 2.0 + 1.0 + 0.2 + 0.5 0.3 + 2.0 + 1.0 + 0.4 + 0.5	£140
Conviso One	Not used	26	1.0	£63
ETO = ethofumesate, PMP = phenmedipham, MTM = metamitron				

At high burden sites, budget on spending around £200/ha on herbicides to control annual broad-leaved weeds. In situations where volunteer potatoes, thistles and where other difficult weeds are present then costs will be higher. Controlling grass weeds has not been factored into these costs and will add around **£20/ha** but again will depend on species and abundance.

What went wrong with weed control in 2025?

Weed control was difficult in 2025, the table below highlights some of the issues with accompanying comments.

Problem	Comments
Variable crop emergence	Weed control should begin as soon as weeds emerge, even if the crop has not fully emerged. It is important to ensure that any seed yet to emerge remains viable. Waiting for complete crop emergence allows some weeds to become too large to control effectively by the time the first spray is applied.
Choice of actives and rates used	In 2025, contact-acting actives such as phenmedipham and ethofumesate performed well. Dry, hot conditions resulted in well-waxed beet and weeds, allowing higher active and adjuvant rates. Poorer control was seen where application rates were too low.
The use of adjuvants	Using a mineral oil is benefical when weeds are 'tougher', and rates of application need to be kept high. Applying early in the morning or into the evening gave best results and allowed higher rates to be used.
Nozzle choice	Independent advice on nozzle choice is limited, but historic work at Morley showed fine sprays gave the best control of small weeds. Flat-fan 02 nozzles performed well on farms this year and at the Yaxley, Suffolk demonstration site.
Speed of application	Going too fast can result in poorer weed control, dust can 'fly' up and reduce herbicide activity and overall spray coverage will be poorer. Travelling at 8Km/hr – 12 km/hr is optimum and allows boom height to be maintained at 50cm above the target.
Intervals between sprays	Tight spray intervals were required in 2025, long intervals allowed weeds to recover resulting in higher rates of active and adjuvants being required to control weeds. Aim for 5-7 days between sprays when weeds are tough, check product labels as they will vary. Weeds may look dead but they have an amazing capacity to recover if not fully annihilated.
Open canopies	Open canopies meant that weed germination continued into the summer and these weeds competed with the crop. Getting good crop ground cover helps with with weed control.
Final spray dates	As with the BBRO trial at Brettenham spraying stopped too soon, this in combination with the open canopy meant late germinating weeds impacted on yield and harvesting.

Alternative methods of weed control – are they economical?

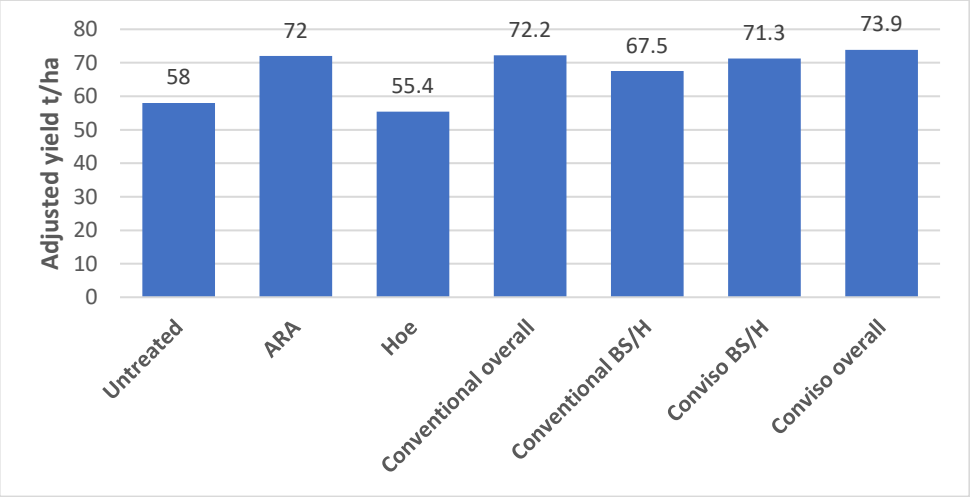
A large scale weed control demonstration at Red House Farm, Yaxley, Suffolk was carried out for a second-year courtesy of the Hammond Family. Lemken UK provided a band sprayer tractor hoe combination attached with camera guidance, and the farm used their own Bateman sprayer. At the Desherb' Avenir field 2023 event in France the **Ecorobotix/ARA** was demonstrated, (Beet Review September 2023 Vol. 91 No.3) this led to the ARA making an appearance at the Yaxley site in 2025 courtesy of Angus Hill and VCS UK.

The weed burden at the Yaxley site in 2025 was low, with fewer than **20 weeds/m²** recorded. The dominant weed species was fat hen. Final weed assessments showed no significant differences between treatments. Overall, the **Conviso® One** programme applied as a band spray in combination with tractor hoeing provided the best level of weed control. Rates of application and costs are shown in the table below. Note that an extra seed cost of around £250/ha should be added considered if using a SMART variety.

Treatment	Active	Rates applied/ha		Active applied/ha (g a.i.)		Total Cost £/ha	
		Band sprayer	Bateman	Band sprayer	Bateman	Band sprayer	Bateman
Conventional x 3	PMP ETO MTM Oil	0.8 0.12 0.4 0.2	2.0 0.3 1.0 0.5	128 60 280	320 150 700	£45	£120
Conviso One x 1	FSU TCM	0.4	1.0	20 12	50 30	£26	£65
ARA/Eco x 2	PMP ETO MTM Oil	3.0 0.6 1.0 1.0	50 Litres of water 11L/ha used			£24	

ETO = ethofumesate, PMP = phenmedipham, MTM = metamitron

Yield digs were taken from all treatments, and the results are shown below; there were no significant differences in adjusted yields between treatments.



On the Yaxley, low weed burden site all methods of weed control worked well and were commercially acceptable. When looking at alternative methods of weed control consider the following: - a) cost of equipment b) time and labour c) ability to use if extremely dry, wet or windy d) cost of herbicides and seed used e) cost of fuel used f) expected weed burden g) ability to use equipment across the rotation. At the Yaxley site at farm level the **most economic option remains the overall application of herbicides with the Bateman sprayer** using a conventional variety. Work will continue in 2026 with the ARA/Ecorobotix.

Emerging weeds – should we be concerned?





Velvet leaf **Barnyard grass** **Mugwort**

The identification of velvet leaf (*abutilon theophrasti*) in sugar beet on two different farms in 2025 was a concern, this weed is recognised as one of the world's worst weeds. Barnyard grass/Cockspur (*Echinochloa crus-galli*) is also becoming more prevalent and can be very completive in sugar beet crops. Mugwort/wild chrysanthemum (*Artemisia vulgaris*) is a native weed to the UK but numbers are increasing in sugar beet, it can be almost impossible to control once it gets established due to its root system.

The new sugar beet active in the pipeline from Corteva (florpyrauxifen-benzyl) has activity against velvet leaf, but at present control by hand pulling. There are a number of actives that are effective against barnyard grass in sugar beet including clethodim, the grass needs to be growing actively and plants need to be small when applications are made. Mugwort is more problematically, herbicides used in sugar beet e.g., triflusulfuron and clopyralid are likely to stunt and twist the plants if applied when they are small but are unlikely to give full control. Consider using phenmedipham + ethofumesate + triflusufluron-methyl + lenacil + clopyralid + Oil at close intervals.

The emergence of 'new' weeds is being observed across the arable rotation and is not unique to sugar beet (Beet Review, September 2025, Vol. 94 No. 1, p.45). Some species appear to be associated with game cover and cover crop mixes, which are not regulated for seed contamination. It is therefore prudent to retain samples of any seed brought onto the farm so that potential impurities can be tested if required. This is just a selection of "emerging" weed species that have been found in the sugar beet crop during National Crop Surveys in recent years.

New herbicide active for 2027?

florpyrauxifen-benzyl
MOA: auxin mimics, systemic, mostly foliar uptake
HRAC classification: 4
Chemical family: arylpicolinate
Timing: post emergence of the crop

BBRO have been evaluating the active florpyrauxifen-benzyl (Rinskor) in sugar beet trials during 2024 and 2025 looking at its activity against annual broad-leaved weeds found in sugar beet and its performance in tank mix with other herbicide actives. In trials florpyrauxifen-benzyl has shown good activity against fat-hen and Corteva claim activity against fool's parsley, cleavers, annual mercury and umbelliferous species. At the 2025, BBRO trial at Navenby a tank mix of florpyrauxifen-benzyl + phenmedipham + ethofumesate (Photo 1) gave weed control comparable to a mix of phenmedipham + ethofumesate + metamitron + lenacil (Photo 2). Both treatments were commercially acceptable. Trials will continue in 2026 looking at efficacy and compatibility.


Photo. 1 **Photo. 2**

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