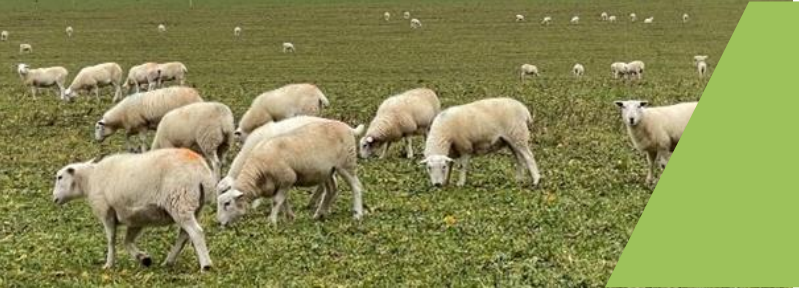

Cover Crops

Cover crops

Growing sugar beet provides a great opportunity to deploy cover crops on farm and reap the potential benefits they may offer.

With government schemes available, such as the sustainable farming incentive, which reward cover crop use it is important that the risks of using them are carefully assessed. BBRO has prepared this fact file to help you balance the pros and cons of the most popular cover crops, as identified in the 2023 BBRO cover crop survey, and help you choose suitable species for your farming system. A mix of two to three cover crop species offers a balance between cost and performance, so selecting species which complement each other is a good approach.

Key reasons for growing cover crops ahead of sugar beet are:
1. To improve soil structure
2. Increase soil organic matter
3. To prevent nutrient loss and soil erosion
4. For grazing
5. Part of an IPM strategy for BCN

Cover crop destruction

To prevent a green bridge, it is key that full destruction of the cover crop is achieved 6 weeks ahead of sugar beet drilling. When using glyphosate for cover crop destruction consider that it will take longer to work in the cold winter months. Timely destruction is especially important when using Brassicas and Phacelia due to increased virus transmission risk. If clovers are used, consider the use of glyphosate and 2,4 D in a premixed formulation to achieve good control.

Key species considerations

A simple low-cost mix safe for use ahead of sugar beet is black oat and vetch. Brassicas, Clovers, Phacelia and Buckwheat are also popular but there are some important considerations:

- Vetch can be sown into late September and still fix nitrogen whereas clover species struggle to fix nitrogen if sown after the end of August.
- Buckwheat is a good option as it is not high risk regarding BCN or virus transmission, however it is not frost hardy.
- Black oats have the low risk of Buckwheat without the frost susceptibility
- Brassicas pose a risk regarding both BCN and virus yellows. If using brassica cover crops, ensure a BCN resistant radish or mustard is used, preferably a Class 1 type.
- Brassicas can host virus and are especially palatable to aphids
- Phacelia is less palatable to aphids than Brassicas but hosts all three of the yellowing viruses.
- Most cover crop species host free living nematodes which cause Docking Disorder.

BBRO cover crop table

The table (overleaf) gives an overview of the key aspects of each cover crop species highlighting both the benefits and risks they pose to the sugar beet crop and wider rotation. These are split into agronomic aspects and pest and disease risks. These are general observations and may differ depending on how the cover crop is managed and are presented for guidance.

We encourage you to talk to your agronomist based on this information and if you require more guidance to contact us via email info@bbro.co.uk or phone 01603 672169

Agronomic Factors

Cover Crop Species		Fodder/Oil Radish	Tillage Radish	Stubble Turnip	Forage rape	Brown mustard	White Mustard
Binomial name		*Raphanus sativus*	*Raphanus sativus*	*Brassica rapa*	*Brassica napus*	*Brassica juncea*	*Sinapis alba*
Recommended sowing date (following cereal crop)		Jul-Sep	Jul-Sep	Jul-Aug	Jul- Aug	Jul- Sep	Jul-Sep
N fixer	Y/N	N	N	N	N	N	N
Option to graze	Y/N	Y	Y	Y	Y	Y	Y
Biomass produced	Low-High	Medium	Medium	Medium	Medium	Medium	Medium
Improves soil structure	Y/N	Y	Y	Y	Y	Y	N
Rooting depth	Shallow-Deep	Deep	Deep	Deep	Shallow	Shallow	Shallow
Frost resistance	Low-High	Medium	Low	High	Medium	High	Low
Volunteer risk	Low-High	Low	Low	Low	Low	Low	Low
Ability to control in sugar beet	Low-High	High	High	High	High	High	High
Seed cost	£ - £££	££	££	££	£	£	£
Standard sowing rate (as straight)	(Kg/ha)	15	7.5	5	10	5	20

Pests & diseases

BCN host	Y/N	Y**	Y	Y	Y	Y	Y**
FLN host	Y/N	Y	Y	Y	Y	N	Y
VY host risk***	None-High	Low	Low	Low	High	Medium	Low
Aphid risk****	Low-High	High	High	High	High	Medium	Medium
Wireworm host risk	Low-High -Reduces	High	High	High	High	Low	Low
Slug host risk	Low-High	High	High	High	High	Low	Low
Leatherjackets	Low- High	Low	Low	Low	Low	Low	Low
Pollen/Nectar source	Y/N	N	N	N	Y	Y	Y

*Can be sown later but N fixation may be limited ** Use of resistant varieties can help manage BCN. If using a brassica cover crop on fields with suspected BCN infestations, you must use a resistant example. If looking to actively lower a BCN population you should aim to use a Class 1 Radish or Mustard. *** Limited data from BBRO hosting trials. ****From observations in BBRO inoculated glasshouse trials

	Black Oat	Rye	Italian ryegrass	Vetch	Crimson clover	Egyptian/ Berseem clover	Red clover	Phacelia	Buckwheat	Sunflower
	Avena strigosa	*Secale cereale*	*Lolium multiflo-rum*	*Vicia sa-tiva*	*Trifolium incarnat-um*	*Trifolium alexandri-num*	*Trifolium pratense*	*Phacelia tanaceti-folia*	*Fagopyrum esculentum*	*Helianthus annuus*
	Jul-Sep	Jul-Sep	Jul- Sep	Jul-Aug*	Jul-Aug*	Jul- Aug *	Jul-Aug*	Jul-Sep	Jul-Sep	April-June
	N	N	N	Y	Y	Y	Y	N	N	N
	Y	Y	Y	Y	Y	Y	Y	Y	N	N
	High	High	High	Medium	Low	Low	Low	High	High	High
	Y	N	N	Y	N	N	N	Y	N	Y
	Medium	Shallow	Shallow	Medium	Shallow	Shallow	Shallow	Medium	Shallow	Medium
	Medium	High	High	Medium	High	Low	High	Medium	Low	Low
	High	Low	Low	High	Low	High	Low	High	Low	Low
	High	High	High	High	High	High	High	Low	High	High
	£	£	££	£	££	££	£££	££	£	£££
	20-75	50-70	30-35	85	15	12.5	15	10	70	25
	N	N	N	Y	N	N	N	N	Y	N
	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	None	Low	Medium	High	Medium	Medium	High	High	Low	Low
	Low	Low	Low	Medium	High	High	High	Low	Medium	Medium
	High	High	High	Low	Low	Low	Low	Low	Reduces	High
	High	High	High	Low	Low	Low	Low	Low	Low	Low
	High	High	High	Low	Low	Low	Low	Low	Low	Low
	N	N	N	Y	Y	Y	Y	Y	Y	Y

The information within this table has been obtained from a wide range of sources in order to provide as much detail on each species as possible. However, performance will depend on a range of factors, such as sowing date, autumn conditions, companion species, sowing rate and method of destruction. The details we have outlined for each species are general observations for when each type is grown under optimal conditions.

Oil radish

Tillage radish

Brown mustard

Stubble turnip

White mustard

Forage rape

Black oat

Rye

Italian rye grass

Vetch

Crimson clover

Egyptian/berseem clover

Phacelia

Buckwheat

Sunflower