

Pests

Beet Cyst Nematode (BCN)

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Beet cyst nematode, *Heterodera schachtii* (BCN), is a harmful pest of sugar beet and can result in serious yield loss (50%+). Infections in the UK are believed to cover around 10% of the national crop, however, incidence may be much greater as BBRO's Plant Clinic receives more positive cases every year.

BCN favours lighter sandy, loamy and organic soils, although it has also been reported on heavier soils.

When: All year round. White cysts visible on roots June – September.

Symptoms: The nematodes feed from within the sugar beet's lateral roots, leading to bearded/fanged root systems which prevent the crop from accessing adequate water/nutrients. This leads to wilting symptoms to appear (when the remainder of the crop is healthy and upright).

Risk Factors: BCN has been found in all factory areas but is particularly widespread in East Anglia. One cyst can hold up to 600 eggs and can remain viable in the soil for 20 years.



Identifying BCN

If you suspect BCN in a growing crop, pull up a few plants and inspect for signs of BCN: small, white, lemon-shaped blisters on roots which burst when squeezed – Tip: use a magnifier to help ID cysts. White cysts are evident during late spring and summer, before they mature, turn brown and detach from the root. Fanged roots and high dirt tare are further signs of BCN.

Soil Testing

Sampling for BCN can take place at any time of the year and can help identify infestations prior to drilling (allowing selection of BCN tolerant varieties). Ensure the test is suitable and optimised for *Heterodera* species as soil must be kept moist throughout. BBRO can provide advice on labs and sampling via plantclinic@bbro.co.uk.

Lab Reports should state if cyst nematodes were found and the species present:

Beet cyst nematode: *Heterodera schachtii* the only cyst nematode which affects UK sugar beet.

Other common cyst nematode species which may be identified:

Cereal cyst nematode: *Heterodera avenae*
Brassica cyst nematode: *Heterodera cruciferae*
Potato cyst nematodes: *Globodera pallida* & *G. rostochiensis*

Results should state the population level found (eggs + juveniles/g). Historically, it was advised that populations >4 eggs and juveniles per gram of soil should not be used to grow sugar beet. Tolerant varieties should now perform well at this level of infestation, but heavier infestations (20+ eggs per gram will represents a significant threat to yield.

Cover crops

Many cover crop mixtures will use at least one BCN host. These can produce a new generation of cysts over the autumn which will severely impact the next sugar beet crop.

BBRO research has shown the most effective cover crops are the Class 1 types which can limit multiplication of BCN. Class 2 types also exist which are less resistant and best suited in situations where sugar beet will not be grown immediately after. Avoid growing any standard brassicas as they will increase population levels significantly.

British Beet BBRO Research Organisation

3 steps to protect yourself from BCN:

1. Assess your risk and variety options:

- Do you have a confirmed BCN infestation?
- Are you growing near BCN infested land?
- What is your soil type?
- How often do you grow BCN host species in on your fields?
- Do you have machinery on your farm that also works on BCN risk land?

Variety: Changing variety is the simplest and most effective way to manage BCN. BCN tolerant varieties reduce the number of invading juveniles which produce cysts and therefore place less burden on the plant. Many of the top-yielding choices on the BBRO Recommended List are also BCN tolerant, meaning you get the best performance with or without BCN infestations. BCN tolerant CONVISO® Smart varieties are also available.

2. Think Hygiene and limit spread

Where practicable, clean machinery between farms and/or when working between infected and clean fields. This is important throughout the rotation to limit spread of dormant cysts.

3. Maintain good weed control and avoid planting other BCN hosts such as:

Amaranths, Beets & Goosefoots:
Love lies bleeding, Common Amaranth, Green Pigweed, Fat Hen, Common Orache, Garden Beetroot, Sowbane/Maple-Leaved Goosefoot, Quinoa, Spinach, Garden Orache, Sugar Beet, Fodder Beet, Chard, Good King Henry

Carnations/Pinks:
Corncockle, Wild Carnation/Clove Pink, Soapwort/Wild Sweet William, Common Chickweed

Brassicas:
Wild Radish, Fodder Radish, Chinese Cabbage, Oilseed Rape, Cabbage - All species, Turnips, Gold of Pleasure, Shepherd's Purse, Garden Cress, White Mustard, Field Pennycress

Legumes:
Reversed Clover, Indian Pea, Fodder Vetch

Buckwheats:
Buckwheat, Green Buckwheat, Pale Persicaria, Sheep's Sorrel

Variety Selection Flowchart:
Consider the following when choosing your sugar beet variety

Do you have BCN on-farm?

Are you near infested land?

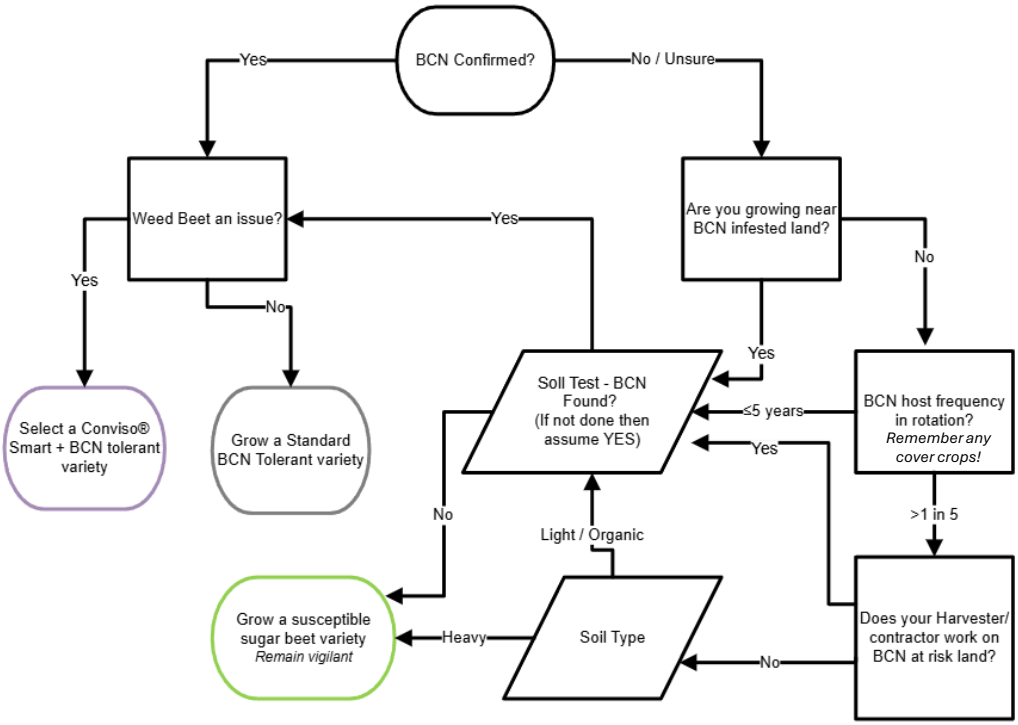
How often do you grow a BCN host crop?

What is your soil type?

Does machinery on your farm also work on BCN infested land?

Do you need a soil test?

Do you have a weed beet issue?



If in any doubt whether to grow a BCN tolerant variety?
Switch as a precaution