

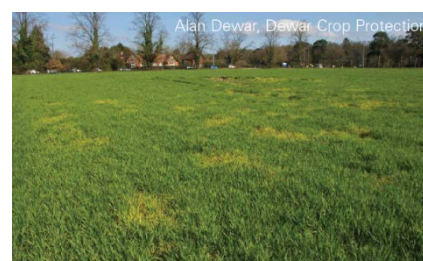
BYDV management tool

Barley/cereal yellow dwarf viruses (BYDV) are mainly transmitted by the bird cherry–oat aphid and the grain aphid – via wingless and winged forms.

Wingless aphids, which live on grass or volunteer cereals, can colonise the following cereal crop. This ‘green bridge’ can be managed, to various degrees, through cultivations.

Winged aphids migrate to newly emerged crops from grass, volunteer cereals or elsewhere. In most years, this infection route stops in November but it can continue throughout mild winters.

Information on aphid flights is published in AHDB Aphid News cereals.ahdb.org.uk/aphidnews



BYDV symptoms

BYDV management tool

Initially, aphids colonise relatively few crop plants. When the second generation offspring are produced, these tend to move away from the plant originally colonised. Consequently, controlling this generation is a key component of a BYDV management strategy.

The timing of the second generation can be approximated by accumulating daily average air temperatures above a baseline temperature of 3°C. It takes around 170 ‘day degrees’ (DD) for the second generation to be produced. To use a simple scenario, daily average temperatures of 20°C for ten consecutive days – $(20^{\circ}\text{C} - 3^{\circ}\text{C}) \times 10$ days – equates to 170DD. As average daily temperatures decrease throughout autumn into winter, earlier drilled crops usually reach the 170DD threshold quicker.

DD calculations should start either:

- On the day of emergence for untreated crops
- When aphids are present and protection from neonicotinoid-treated* (clothianidin) seed has run out (around eight weeks after sowing). *Only available for cereals drilled before 19 December 2018
- Following a pyrethroid application (account for product persistence, see label)

Powered by the AHDB WeatherHub, the BYDV management tool features a UK map of weather stations. People can select their nearest weather station (or stations, by selecting a ‘Region’) and select a start date (using the slider) for DD calculations. Once 170DD has been accumulated, the relevant line on the chart displayed enters the yellow zone. At this stage, crops are estimated to be at an unacceptable risk and treatment should be considered. The map also shows (*) the suction trap sites, which are managed by Rothamsted Research, and aphid flight data collected by them.

The BYDV management tool should be used as part of efforts to minimise insecticide use and to manage resistance threats. Grain aphids with moderate levels of resistance to pyrethroids are already widespread in the UK, although effective control should still be achieved at full label rates. At present, there is no evidence of insecticide resistance in bird cherry–oat aphid.

BYDV risk is highest during the early growth stages and passes at GS31. Prolonged cold periods can also reduce the risk significantly.

The tool can be accessed via cereals.ahdb.org.uk/aphids