

Pre-harvest glyphosate use in cereals and oilseed rape



Key information

Glyphosate products may be used pre-harvest on a range of cereal, oilseed and pulse crops to control weeds, aid harvesting and protect grain quality and food safety

Stewardship is essential to minimise preventable residues (in water and produce)

Stewardship is also required to minimise the risk of resistance occurring in UK weed populations, although a single pre-harvest application of glyphosate per crop should not increase the risk (unless survivors are present from prior glyphosate applications)

Action

- Be sure your target market permits the use of glyphosate
- Check and follow product labels
- Follow best application practice (for maximum efficacy and drift reduction)
- Only apply glyphosate as a harvest aid when the grain or seeds have less than 30 per cent moisture content
- Use the guidance in this publication to estimate moisture contents
- Only target weeds that are green, healthy and actively growing

For further information, visit cereals.ahdb.org.uk/glyphosate

Weed control

Glyphosate applications can be used as part of a long-term integrated management plan to reduce weed burdens and also to ease harvest of weed-infested crops. Perennial weeds – such as couch and volunteer potatoes – are particularly susceptible at this spray timing. Late growth of annual weeds can also be controlled at this stage.

Harvest aid

In oilseed rape and linseed, glyphosate applications can be used to facilitate direct combining, normally within 21 days of application. For cereals, glyphosate applications can reduce green material, including immature tillers, and improve harvest efficiency and grain storage. This can be particularly valuable in wet seasons.



Best practice: Cereals

Glyphosate residues can sometimes be found in bread samples. To date, these residues have been well below Maximum Residue Levels (MRLs), according to information published by the UK Expert Committee on Pesticide Residues in Food (PRiF)¹. In 2016, for example, the mean level in wholemeal bread was 8 per cent of the MRL and in other bread was 13 per cent.

The precise incidence in home-grown milling wheat is not clear, as UK bread can contain imported wheat. It is, however, essential that best practice is followed to minimise glyphosate residues in cereal products.

¹ <https://www.gov.uk/government/groups/expert-committee-on-pesticide-residues-in-food-prif>

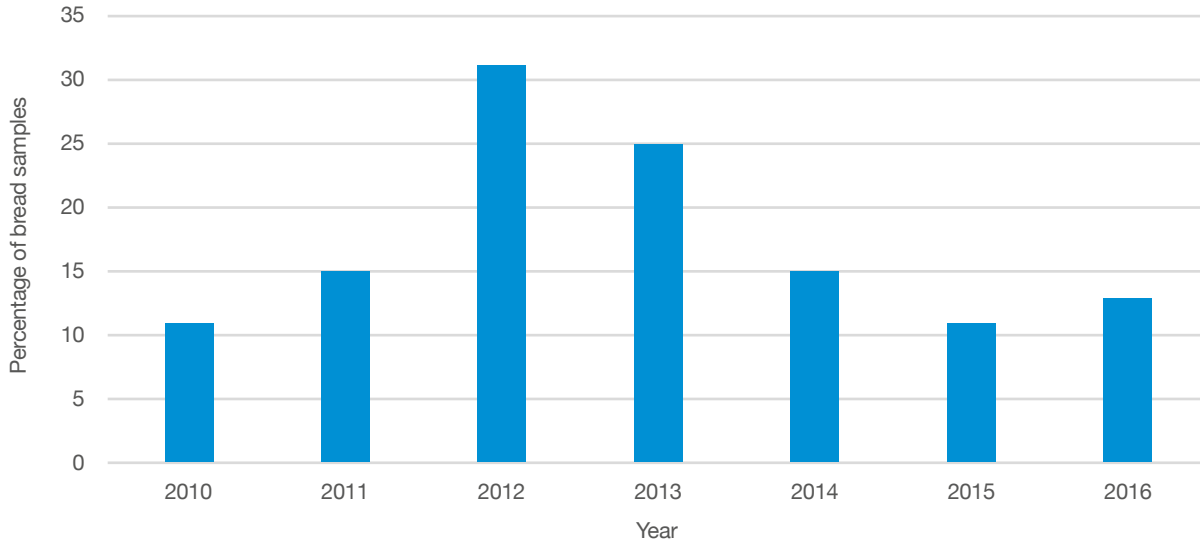


Figure 1. Percentage of bread samples (ordinary and speciality) containing glyphosate residues $\geq 0.1\text{mg/kg}$, 2010 to 2016

Source: Pesticide Residues in Food Monitoring Surveys

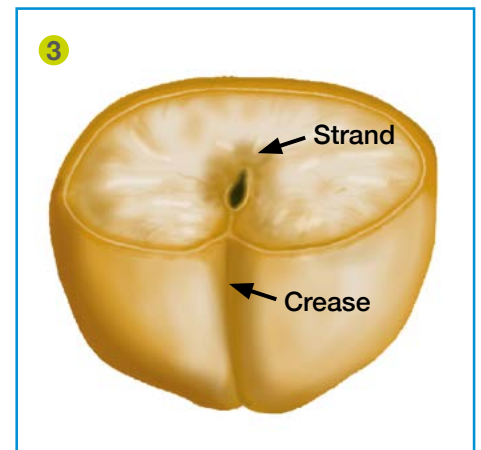
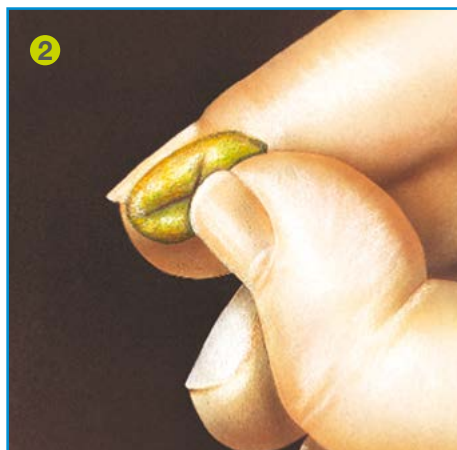
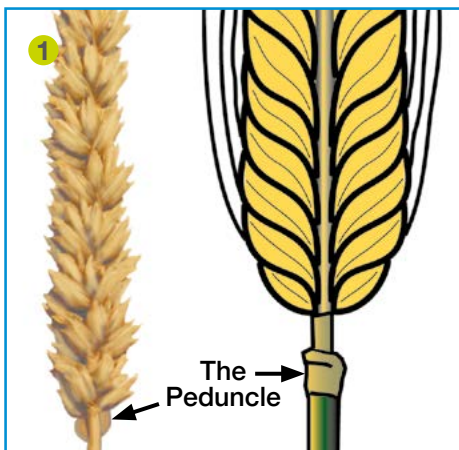
Timing

Glyphosate should only be applied when the grain has less than 30 per cent moisture content. This coincides with the 'hard dough' stage (Growth Stage 87) of grain maturity and normally occurs one to three weeks prior to harvest.

The following visual tests can be used to guide whether a crop is at or below 30 per cent moisture content:

- 1. The peduncle test (wheat and barley):** When the peduncle, situated at the top of the stalk (immediately below the ear), starts to lose its green colour and turns brown.
- 2. The thumbnail test (wheat, barley and oats):** When a thumbnail indentation holds on 20 grains collected from various areas in the crop (from the centre of each ear).
- 3. The split grain test (wheat):** When grains are cut in half and 75 per cent have a dark brown pigment strand in the crease, the grain has reached 30 per cent moisture. If all the grains are marked, moisture content is estimated at below 30 per cent.

All estimates should be confirmed using a moisture meter.



Harvesting

The statutory harvest interval is seven days. Some crops, particularly wheat, may require up to 14 days for the glyphosate to be fully effective. This longer interval is more likely under dull and overcast conditions and/or when broad-leaved weeds are present.

Weed control

Target weeds should be green, healthy and actively growing. Weeds that have senesced, died back or are suffering from drought may not be as susceptible. Ensure the dose is matched to the weed species present (check the product label).

Considerations

When used in accordance with the label, glyphosate may be applied to crops used for feed and to wheat and oat crops intended for milling and to barley intended for malting. Always check your contracts, however, as some end users may restrict glyphosate use.

Do not use glyphosate in crops grown for seed production or in undersown crops.

Do not use glyphosate-treated straw as a horticultural growth medium or mulch. Treated straw, however, may be used for animal feed or bedding.

Ensure the sprayer boom is adjusted in height so the spray pattern covers the target weeds correctly.

Best practice: Oilseed rape

Timing

Glyphosate should only be applied when the seeds have less than 30 per cent moisture content. This can be determined using the following visual test:

Step one: Select an area of the crop that is representative of the field as a whole. Then choose an area of canopy that is typical of the maturity of most of the crop. Depending on the canopy, this may be pods in the middle of the main raceme or on the side branches. At random, pick 20 pods from several plants.

Step two: Open each pod and observe how many seeds have changed from green to brown. If this change is observed in at least two-thirds* of the seeds per pod in at least 15 of the pods picked, then the earliest correct stage** for spraying has been reached. Typically, the crop should be sprayed within four days. If the weather is very cool, however, this can be extended to seven days.

Step three: Check the assessment is representative of the entire field (repeat steps one and two, as required)

* If approximately half of the seeds are turning brown, then the earliest correct stage for spraying is likely to be in three days, but it is important that the procedure is repeated to check that the correct stage has been reached.

**Spraying too early will result in poor desiccation.

Estimates should be confirmed using a moisture meter.

Harvesting

The statutory harvest interval is 14 days. Up to 21 days, however, may be necessary before combine harvesting.

Weed control

The target weeds should be green, healthy and actively growing. Weeds that have senesced or died back or are suffering from drought may not be as susceptible. Ensure the dose is matched to the weed species present (check the product label).

Considerations

Do not use glyphosate in crops grown for seed production.

Do not use glyphosate-treated straw as a horticultural growth medium or mulch.

Poor results can be expected from treatment of heavily laid crops with major secondary growth or significant areas of uneven ripening (eg caused by pigeon damage or poor drainage).

Poor results can also be expected from laid crops where stems have been broken, although kinked stems are acceptable.

Non-target vegetation

Nearby crops and non-target vegetation are potentially sensitive to spray drift from glyphosate applied pre-harvest. Care should be taken to minimise drift – follow best spraying practice, and check weather and wind conditions. One of the most sensitive crops is seed potatoes. Guidance on how to use glyphosate safely near seed potato crops is available from potatoes.ahdb.org.uk

Important

This publication is for generic guidance only.

Glyphosate product labels can vary in the range of crops and weed species covered and the dose and timings recommended.

Always check the product label information before use and follow the specific product instructions.

Always consider your local conditions and consult a BASIS-qualified adviser, if necessary.

Ensure any use is acceptable for the market you are selling into and keep full records, as necessary.

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Cereal test images courtesy of Monsanto.

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Further information

More information on harvest options for oilseed rape can be found within the **AHDB Oilseed rape guide**

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