

RECOMMENDED LISTS

AHDB Recommended Lists (RL) for cereals and oilseeds: The assessment of sprouting in winter wheat and spring wheat varieties (2022–26)

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Changes from previous version

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Part 1: General Information

1.1 Aims

During periods of high humidity and/or rainfall, grains of wheat that are at, or approaching, maturity are liable to germinate in the ear before harvesting takes place. This can lead to serious economic consequences for the grower. Only a small number of sprouted grains can render a wheat sample unsuitable for use in bread-making grists due to high enzyme activity as measured by the Hagberg Falling Number test. There are marked varietal differences in predisposition to sprouting which this special test is designed to assess.

1.2 Crops

Winter wheat
Spring wheat

Part 2: Field plots and samples

2.1 Sites

The site should be free of cereal volunteers, especially of wheat. Sites should be chosen where plots can be left in the field after the normal harvest timing and where the shedding of grain or ears will not have serious consequences for the succeeding crop.

Irrigation must be available.

2.2 Trials

Winter wheat sprouting trials: WW586 & WW587
Spring wheat sprouting trials: AW588 & AW589

The two trials may be combined into one trial sown in mid-November.

2.3 Replications

3 reps not taken to yield.

2.4 Plot Size

Minimum plot size 1 m².

2.5 Treatment

Agrochemicals should be used as appropriate for a commercial crop to promote 'normal' growth and to keep the plots substantially free of lodging, disease and weeds.

2.6 Sowing Dates

Winter wheat: October to mid-November

Spring wheat: Mid-November to March with a preference for late autumn sowing.

2.7 Varieties

All varieties on the AHDB Recommended List sowing list of the relevant crop including candidates.

2.8 Management

The seed rate should be no higher than 200 seeds/m² to minimise the lodging risk, and spring nitrogen fertiliser should be adequate to allow good growth without raising the lodging risk: a rate of approximately 50 kg/ha has often been adequate. Herbicides and fungicides should be applied as necessary keep the crop substantially weed and disease free.

It may be necessary to erect anti-lodging support netting during stem elongation in the spring at a height to allow the plants to grow through and be supported by it. It is vital that the irrigation is applied uniformly and it may be necessary to provide wind protection netting of sufficient height to allow irrigation to be applied uniformly and consistently across the site.

Failure to provide suitable plots (i.e. without lodging) and uniform and consistent irrigation may constitute a breach of contract.

2.9 Harvest and Sampling

When all varieties have reached maturity, fine irrigation should be evenly applied at regular periods to maintain high humidity throughout the trial. The trial should be irrigated regardless of any natural rainfall and if the weather conditions are very hot and dry then the amount of water to be applied may need to be increased.

Carefully monitor the plots of a variety with a predisposition to sprouting in the ear for any occurrence of sprouting (usually after approximately 5 days irrigation). Examination is by hand rubbing ears taken from the plots daily. Once the susceptible variety has reached 25% sprouting, 30 ears of each plot are harvested in labelled bags and dried. Irrigation is then maintained for a further 48 hours after which a second (reserve) set of 30 ears are harvested and dried: these are used if the degree of sprouting in the first samples is deemed insufficient to give good discrimination.

Ears should be dried in gauze bottom trays in a warm/hot air drying oven for 8 hours at 40°C.

Once dried the samples should be sent to the designated laboratory for sprouting assessment.

2.10 Records

Site, location, management and husbandry details plus any factors that have an effect on the growth of the crop and the data recorded. No yield data are required.

Part 3: Lab assessment of sprouting

3.1 Records

The dried ear samples from harvest one should be threshed using a bench-top thresher. Two sub-samples of 100 grains are extracted from each plot for assessment and the number of sprouted grains in each of the 100 grain samples counted and recorded: the two sub-sample values should be meaned to give a percentage plot value figure.

If the number of sprouted grains in the first sample set is low (mean <10%) then the second set of samples, which were exposed to two further days of irrigation are threshed and assessed using the same technique. The data should be added to those from the first sample set and meaned to give a percentage plot value figure for both sample sets.

3.2 Assessment Technique

Using a x2 magnifier, examine each individual grain in the sub-samples for sprouting. Sprouting can in some cases be difficult to assess. Positive sprouting is scored when any of the following are observed:

- Primary root and plumule are still attached to the seed (obvious sprouting).
- Complete embryo removed from the seed (As above but threshing damage has removed the root, plumule and embryo from the seed).
- The pericarp above the embryo is ruptured (The primary root was on the point of breaking through the pericarp on the harvest date, subsequent drying and threshing has allowed damage to the pericarp to occur).

Unsprouted grain will appear intact but may look weathered due to the constant wetting and drying during the irrigation period.

All data should be recorded in an Excel workbook (as supplied by AHDB).