

# Кои са основните начини за пренос на болести по зърнено-житните култури от един сезон в друг и какви са възможностите това да не бъде допуснато?

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For most diseases, seed disinfection is the only practically feasible solution for their control. Key factors for achieving high efficiency in seed disinfection are:

- Well-cleaned and dedusted seed – dust and foreign matter can absorb up to 30% of the treatment product;
- high-quality and well-calibrated seed treatment equipment – good equipment must ensure a constant dose and uniform coverage of the seed with up to 2 liters of solution per 100 kg of seed;

- Proper selection of a high-quality, broad-spectrum fungicide;
- Use of certified seed from a single batch.

## Transmission via seed, soil and plant residues

Seed is a major source of infection, including over long distances to fields that have so far remained unaffected. Control through sowing certified, high-quality and treated seed is by no means an empty phrase that we repeat every year. It is a very useful, relatively easy method, which also represents the first step in an overall strategy for dealing with persistent diseases during the vegetation period.

When mixing different grain batches there is a serious risk of transferring spores; therefore, it is advisable to use seed from a single batch, but if this is practically impossible, it is of particular importance to rely on a high-quality seed treatment product.

## Standard seed-borne diseases are:

Common bunt of wheat (*Tilletia foetida/carries*)

Loose smut of wheat (*Ustilago tritici*)

Covered smut of barley (*Ustilago nuda*)

More specific and difficult to control are:

**Fusarium head blight**, seed and seedlings (*Fusarium graminearum*, *F. culmorum* and other fungi of the genus *Fusarium*). The disease is very important and is associated with different types of damage from emergence to harvest, and even during storage of wheat and barley (especially in grain with higher moisture). Immediately after sowing, a form of root rot develops, which can destroy a large proportion of the seedlings. In spring this is a prerequisite for more active *Fusarium* infection of the heads during flowering. Diseased seeds are lighter and a large part of them are removed already in the combine, but if the batch is intended for sowing, additional cleaning is necessary. Some varietal differences in the level of resistance are observed, but the genetic method of control is not the leading one.

Successful control of *Fusarium* root rot requires an integrated approach; each of the listed measures is essential and leads to a lower risk of damage:

- Mandatory flowering treatment of the seed production field with a highly effective fungicide;
- Removal of infected seed both in the field by the combine and additionally during conditioning;
- Storage of seed at optimal moisture content;
- Seed treatment with a highly effective fungicide for seed treatment;
- Avoiding maize, wheat and barley as preceding crops;
- Avoiding minimal and no-till cultivation.

### **Snow mould** (*Microdochium (Fusarium) nivale*)

The fungus is among the main causes of seedling death and thinning of stands in autumn. Most often, similarly to Fusarium diseases, the fungus infects the heads, but unlike them it does not cause symptoms on the seed, which makes autumn infection difficult to predict. Seed treatment is a highly effective method, but highly effective systemic products must be used, since the pathogen reaches the embryo.

**Root and basal rot** (*Gaeumnamomyces graminis*); **Helminthosporiosis** (*Bipolaris sorokiniana* (a.s. *Cochliobolus sativus*); **Early leaf blight of wheat** (*Septoria tritici*); **Glume blotch (septoria) of the heads** (*Stagonospora nodorum*). This complex of diseases is observed mainly in situations where wheat or barley is the preceding crop. The infection is accumulated in the plant residues and is transferred to the young roots and seedlings. This leads to various severe manifestations of root rot in patches or later to white heads and death of whole plants.

When a cereal preceding crop cannot be avoided, control should be carried out in two steps:

- seed treatment with an effective and broad-spectrum fungicide;
- vegetative treatment in spring with a high-quality fungicide.

### **Net blotch of barley** (*Drechslera teres*)

A major disease in the country, with an increasingly wider distribution. On the leaves, elliptical-elongated spots with irregular margins and dark brown colour are observed, appearing first on the lower leaves of the crop. In susceptible varieties, complete scorching of the leaves and a strong reduction in yield are observed. The first infections occur already in autumn, with volunteers and plant residues playing a key role in the spread of the

disease. Seed infection is of significant importance for the transfer of the pathogen into fields free from infection. During the vegetation period the infection is spread over long distances by air. Under heavy attack the symptoms can be confused with leaf stripe disease, but unlike it, not all tillers are attacked to the same extent.