

**Title** Effectiveness of seed treatment against seed transmission of plant pathogens with different ecological characteristics

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#### **Abstract**

In Siberia, plant pathogens causing more than 75 per cent of the analyzed 250 most frequent and harmful diseases are transmitted by seed and transplanting stock. Seed is a second transmission pathway for soilborne and leaf-stem pathogens and the main way for seedborne ones. Presowing seed treatment is used for control of pathogens from different epidemiological groups; however, the effectiveness of up-to-date seed treatment depends heavily on adaptation of plant pathogens to different kinds of ecological environment. Research shows that presowing seed treatment halts the life cycles of seedborne plant pathogens (smut, ergot) by interrupting the main transmission mechanism. As the main means of transmission for soilborne pathogens (common root rot, *Fusarium* wilt) is through soil, with seed transmission as additional, the dynamics of epidemics depend on the number of pathogens in soil, and seed treatment can only prevent the formation of new epidemic foci in non-infected soil. In the case of leaf-stem infections (*Septoria* blight, rust, powdery mildew), seed treatment prevents the formation of primary epidemic foci around plants which grew from infected seeds. Systemic seed treatments lower plant susceptibility to leaf-stem infections and slow down the epidemic process.