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Sono-Steam – thermal ultrasound

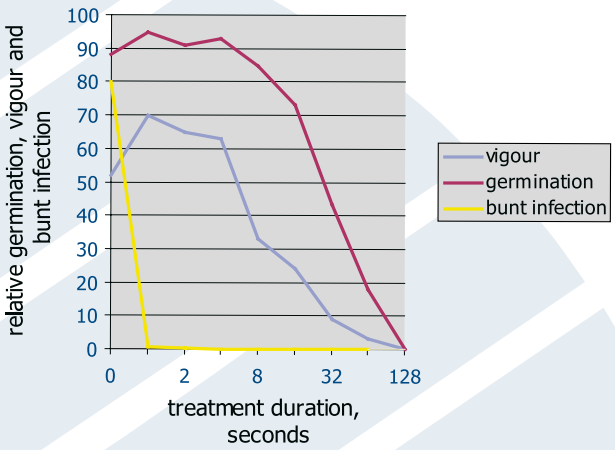
Novel development of heat treatment for seed surface sterilisation

Background

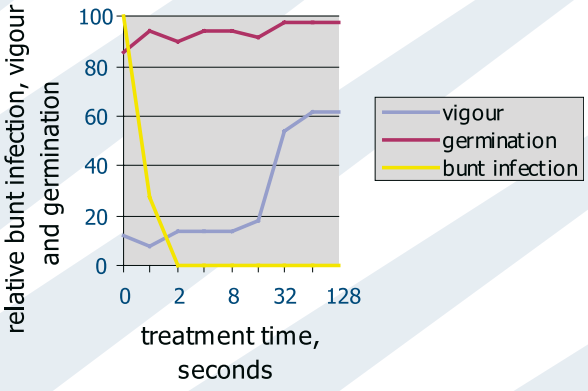
Hot air can in some cases substitute water in heat seed treatments. However, calm air near and inside the seed surface will insulate the seed and prevent heating. This zone of calm air can be removed by ultrasound. With ultrasound, the efficacy of hot air seed treatment can be improved.

FORCE Technology has developed and patented a technology which uses ultrasound and steam to combat microorganisms. The technology can be used in food and feed industry to control human and animal pathogens, eg. *Salmonella* and *Campylobactor*, as microorganisms are eliminated without any chemical additives.

Common bunt in wheat



Common bunt in spelt



Materials and Methods

Common bunt (*Tilletia tritici*) is a seed borne disease of wheat and spelt. The seed *per se* is healthy at the time of sowing, but the seed surface of wheat and the husk surface of spelt is contaminated by dormant bunt spores.

After sowing, the seedlings are infected by the bunt spores. The disease is therefore selected as a model for investigating seed surface sterilisation by thermal ultrasound and both wheat and spelt are tested to represent two different types of seed. Treated seed were grown in greenhouse after germination at low temperatures. Seed vigour was assessed in sand test at 10 Cº.

Conclusion

The *Sono*-Steam technology can effectively control common bunt in wheat and spelt. Short treatments tend to increase seed vigour, likely caused by improved imbibition. The technology may be used also for other purposes in the seed industry such as surface sterilisation in seed analysis.

Agrologica provides consulting within issues of organic farming and seed technology. Further information available at www.agrologica.dk

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