Dry hot air reduces seed-borne pathogens of carrot seeds

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The effect of dry hot treatment of carrot seeds on seed-borne pathogens (*Alternaria dauci*, *Fusarium solani* and *Xanthomonas* sp.) and seed germination was investigated. Carrot seeds (no fungicide) were soaked in water for 1 min before being exposed to hot air (70°C or 75°C) for 10, 20 or 30 min and then plated on potato dextrose agar to assess pathogen growth. Treated seeds were sown in cell trays in a glasshouse to assess germination and weight of subsequent seedlings. All dry hot air treatments significantly ($P < 0.001$) reduced the number of seeds bearing three pathogens compared with the control (air dried at 20°C). Temperature treatment at 75°C for 20 and 30 min killed almost all *Alternaria*. This pathogen was significantly less likely to occur after 75°C than 70°C ($P = 0.038$). For *Fusarium* there was no significant difference between treatments. Treatment at 75°C reduced *Xanthomonas* on the seeds significantly more than 70°C ($P = 0.031$). Higher temperatures and longer treatment both tended to reduce germination, with the 75°C for 30 min treatment having the least germination. Seedling weight tended to be lower after 75°C than 70°C, but length of treatment had minimal effect. It is concluded that 70°C for 10 or 20 min is the best treatment for reducing seed-borne pathogens without affecting the viability of carrot seeds.

The response of potato (*Solanum tuberosum* L.) to the fungus *Rhizoctonia solani*

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Rhizoctonia solani is a soil-borne fungal pathogen of many economically important crops. Thirteen closely related anastomosis groups (AGs) of this pathogen have been identified, each of which affects different plant species. Previous studies have suggested that *R. solani* AG3 is the main cause of disease in potato. *Rhizoctonia solani* infection of potato plants can result in stem canker and tubers with black scurf. Affected plants give a reduced yield, while affected tubers are considered to have reduced quality, resulting in economic loss. The current study investigated the response of different potato cultivars and lines to *R. solani* AG3. Thirty-two potato cultivars/lines, many actively used in the Plant & Food Research potato breeding programme, were screened in a shadehouse pot trial. The trial was laid out in an adapted resolvable block design to ensure uniform exposure to environmental factors. Each cultivar had six replicates, four with and two without AG3 inoculum. Plants were grown to maturity and the resulting tubers were assessed for disease (black scurf). Preliminary results show that none of the lines/cultivars tested were resistant, but degrees of susceptibility varied. In this experiment, stem canker was not observed in any of the lines/cultivars.