

Title Resistance to chemical seed and post-harvest treatments in isolates of *Fusarium* spp. causing potato seed-piece decay and tuber dry rot in Atlantic Canada

Author R.D.Peters, K.A. Seifert and H.W. (Bud) Platt.

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Abstract

Various *Fusarium* spp. can cause potato seed-piece decay prior to planting and tuber dry rot in storage, resulting in tuber yield and quality losses. In Atlantic Canada, *F. sambucinum*, *F. coeruleum* and *F. avenaceum* are the species most commonly isolated from diseased tuber tissue. Testing of isolates of *Fusarium* spp. collected in Atlantic Canada from 2000-2007 for resistance to thiophanate-methyl and thiabendazole using amended agar assays has revealed the association of resistance with a particular species. All isolates of *F. sambucinum* recovered during this time period were resistant to both thiophanate-methyl and thiabendazole, whereas all isolates of *F. coeruleum* and *F. avenaceum* were sensitive to both compounds. In field trials where potato seed pieces were inoculated with either *F. sambucinum* or *F. coeruleum* and then treated with either thiophanate-methyl, fludioxonil or water (control), significant yield increases (compared to the inoculated control plots) were achieved with both chemical seed treatments when seed pieces were inoculated with *F. coeruleum*. However, only plants in plots grown from fludioxonil-treated seed yielded significantly more than plants in inoculated control plots when *F. sambucinum* was used for inoculation. More recently (spring 2007), isolates of *F. sambucinum* and *F. coeruleum* resistant to fludioxonil in amended agar assays have been recovered in Atlantic Canada. Since the isolates of *F. sambucinum* were also resistant to thiophanate-methyl and thiabendazole, multi-class (benzimidazole and pyrrole) resistance was also documented. Resistance of *Fusarium* spp. to chemical products is increasing the challenge of managing potato seed-piece decay and tuber dry rot in Atlantic Canada.