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58105. Use of systemic acquired resistance for control of sugarbeet diseases.

Systemic acquired resistance (SAR), disease resistance induced by prior infections or by chemicals that are themselves non toxic, has been demonstrated in numerous crops. Resistance to *Cercospora* leaf spot of sugarbeets was induced by one such chemical in greenhouse experiments (Nielsen, et al., 1994. *Physiol. Mol. Plant Pathol.* 45:89-99). We tested reported resistance-inducing chemicals for control of sugarbeet diseases under field conditions. Experiments in MI in 1995 demonstrated that putative inducers of SAR did not enhance stand density or size of seedlings. Similarly, no decrease in severity of crown and root rot caused by *Rhizoctonia solani* AG-2-2 was observed in disease nurseries in either 1995 or 1996. Partial protection of plants against *Cercospora* leaf spot was observed in experiments in MI in 1995, but this protection diminished when foliar sprays with the inducing chemicals were discontinued. Experiments in 1996 in MN and ND on control of *Cercospora* leaf spot produced mixed results: SAR-inducing chemicals proved partially effective at reducing leaf spot severity and increasing yields of a susceptible variety, but had little effect with a partially resistant variety at one of the locations. No significant effects were observed at a second location for either variety. Additional experiments on use of SAR for control of *Cercospora* are planned for both MI and ND in 1997.