

BUGBEE, W. M., U.S. Department of Agriculture, Agricultural Research Service, P. O. Box 5677 - University Station, Fargo, ND 58105. - Rhizoctonia-induced phytoalexin production in sugarbeet.

Resistance of sugarbeet to *Rhizoctonia solani* increased with age. The shift from susceptibility to resistance occurred about three weeks after planting and was accompanied by the production of phytoalexins. Three-week-old plants produced more phytoalexin when infected by the AG 4 strain than when infected by the AG 2-2 strain of *R. solani*. At five weeks, more phytoalexin was induced by AG 2-2 than AG 4. AG 4 was more sensitive than AG 2-2 to phytoalexin, which may partially account for the avirulence of AG 4 on older plants. When root slices were inoculated with *R. solani*, more phytoalexin was produced by the susceptible cultivar Ultramono than the resistant germplasm FC 712. The AG 4 strain induced more phytoalexin than AG 2-2, but neither was significantly different than untreated controls. *R. solani* cultures with pectin from Ultramono as the only carbon source contained more phytoalexin elicitors than cultures of FC 712 pectin. AG 2-2 induced more elicitors than AG 4, but neither induced more than the uninoculated control. Pectic fragments appeared to be weak elicitors of phytoalexins. Thus phytoalexins were associated with age-related resistance but not varietal resistance. Pre-formed antibiotics were present in ethanol extracts of root.