GARLIC POWDER AS A SOURCE OF GERMINATION STIMULANTS IN THE MANAGEMENT OF INOCULUM OF *SCLEROTIUM CEPIVORUM*, THE ONION & GARLIC WHITE ROT FUNGUS — A PRELIMINARY REPORT

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Previous reports have discussed management of the onion and garlic white rot disease by using soil applied germination stimulants to induce sclerotia of *Sclerotium cepivorum* to germinate in the absence of host plants. Sclerotia of this pathogen do not germinate repeatedly, and it only reproduces on *Allium* species. In nature, germination only results when ally! and propyl sulfides are emitted from roots of *Allium* species (see "Use of Stimulants of Sclerotial Germination to Manage Inoculum Density of *Sclerotium Cepivorum* and to Control White Rot of Onions and Garlic", In Central Oregon Agricultural Research Center Annual Reports, 1990-1992, Special Report 922). Commercial control of white rot has only been attempted with synthetic, petroleum-derived materials, as it has been believed that natural products would be too expensive and variable to adapt for large scale disease control. Below we present preliminary data which suggests that garlic powder may provide affordable control of white rot disease.

A field trial was located in one of the same naturally-infested fields in which petroleum-derived stimulants were used in 1989-92, between Milton-Freewater OR and Walla Walla WA. Pre-treatment soil samples were collected from designated plots areas on October 14, 1991. Treatments were applied October 15, 1991, at which time the soil temperatures were appropriate for germination. Garlic powder (DeFrancesco and Sons, Firebaugh, CA) was applied uniformly over 6 ft x17 ft plots, then tilled to 10 inches. Rates of application are reported below. Powder was mixed with water and sprayed under agitation over plot area. Plots were then tilled to incorporate the powder. Post-treatment soil samples were collected in May of 1992. Twenty 1-inch diameter soil cores were collected to 10-12 inches deep in the soil profile. Two such 20-core sub-samples were taken at each sample date from each plot. Soil was air-dried and stored until processed. Soil was mixed and 500-m1 aliquots from each sub-sample were sieved for sclerotia, which were picked from screened residue and viability determined

The number of viable sclerotia recovered from plots prior to treatment ranged from 3 to 29. The number recovered pre-treatment was considered 100 percent on a per-plot basis. Following treatment, no sclerotia were recovered from plots treated with 470 or 4,700 pounds per acre garlic powder. Such a response may be sufficient for disease control. From untreated plots, 19 sclerotia were recovered post-treatment compared to 29 recovered pre-treatment, which would result in extensive disease if onions or garlic were planted. In plots treated with 47 pounds per acre garlic powder, 4 sclerotia were found compared to 17 recovered pre-treatment, which was insufficient for disease control. The mean percentage recovery from plots treated with 0, 47, 470 and 4,700 pounds of garlic powder per acre was 77.2, 24.0, 0 and 0 percent, respectively, which were highly significantly different ($P<0.01$). If near eradication of sclerotia can be achieved at rates of application substantially less than 470 pound garlic powder per acre, a relatively inexpensive grade of garlic powder (less than $1 per pound) might provide affordable control of white rot.

This investigation will continue with the support of onion and garlic dehydration companies.