

Germination of both laboratory-grown and field-collected sclerotia of *Sclerotium rolfsii* was severely inhibited on sterilized and non-sterilized soil in vitro by sodium azide ( $\text{NaN}_3$ ) levels as low as  $1 \mu\text{g/g}$  dry soil. Some germination occurred above  $5 \mu\text{g}$  azide treatment with extended incubation time. Mycelial production from germinated sclerotia was restricted and few new sclerotia formed. Between 5 and 20 days of incubation at 27 C, specific soil fungi fruited abundantly on surfaces of non-germinated sclerotia. The extent of fruiting and time of occurrence, in relation to  $\text{NaN}_3$  concentration, strongly suggested a high degree of tolerance of these fungi to azide which probably effected an advantage for their colonization of sclerotia while other microorganisms in the soil were inhibited. Kinds of fungi and frequency of occurrence on sclerotia were influenced by altering the general microbial population of the soil. The following fungi were most commonly associated with sclerotia: 6 species of *Aspergillus*, 3 species of *Fusarium*, *Penicillium cyaneum*, *Penicillium herquei*, *Chaetomium globosum*, *Humicola grisea*, *Neocosmospora vasinfecta*, *Rhizopus stolonifer*, *Thielavia terricola*, *Trichoderma viride*, and *Volutella cylindrospora* sp. nov. (in editam).

## 300.

COMPARISON OF VARIETAL REACTIONS TO COWPEA ANTHRACNOSE IN FIELD PLOT AND DETACHED PETIOLE INOCULATIONS. R.J. Williams. International Institute of Tropical Agriculture, PMB 5320, Ibadan, Nigeria.

Several hundred cowpea varieties exposed to *Colletotrichum lindemuthianum* in field disease nurseries were classified as immune (I), highly resistant (HR), intermediate (IT) or highly susceptible (HS) based on the degree of anthracnose development. Petiole segments detached from young leaves of varieties from field groups I, HR and HS were inoculated with *C. lindemuthianum* and were similarly classified based on the presence and size of sporulating lesions. For the majority of varieties the field and detached petiole (DP) reactions were compatible but some varieties were consistently more susceptible in the DP tests. Inoculation of DP segments from leaves of different ages revealed a decline in susceptibility with increasing leaf age, and varieties differed in the rate of decline. The results indicate that the susceptibility of petiole tissue is an important indicator of varietal susceptibility to anthracnose in cowpea field plots. The DP technique can be usefully used to rapidly screen cowpea collections for sources of anthracnose resistance, but until more information is available on the nature of field resistance some field resistant varieties may escape detection.

## 301.

CROSS-PROTECTION BY *VERTICILLIUM NIGRESCENS* AGAINST *V. DAHLIAE* IN MINTS. H. A. Melouk, C. E. Horner, and V. Q. Perkins. Dept. of Botany and Plant Pathology; USDA, ARS; Oregon State Univ.; Corvallis, OR 97331.

A weakly pathogenic isolate of *Verticillium nigrescens* isolated from peppermint (*Mentha piperita*

'Mitcham') was used to cross-protect peppermint and spearmint (*M. cardiaca* 'Scotch') against a virulent isolate of *V. dahliae*. Inoculations were accomplished by immersing the cut ends of shoot tip cuttings in a conidial suspension ( $5 \times 10^5$  spores/ml) for 45 min at 20 C under florescent lights (6,456 lx). Mint cuttings were inoculated with *V. nigrescens* at 0, 2, 5, 7 and 9 days prior to being inoculated with *V. dahliae*. Inoculated cuttings were placed in sand for rooting and disease development. When inoculations with *V. nigrescens* preceded *V. dahliae* by 7 and 9 days, disease severity was greatly reduced and many plants were symptomless six weeks after inoculation. No cross-protection effects were observed in plants inoculated with *V. nigrescens* 0 and 2 days prior to being inoculated with *V. dahliae*; plants at 5 days showed intermediate disease severity. Six weeks after inoculation there were 10 to 15-fold fewer propagules of *V. dahliae* in stems of peppermint plants cross-protected with *V. nigrescens*.

## 302.

INHERITANCE OF RESISTANCE TO BLACK POINT IN LEEDS DURUM WHEAT. Glen D. Statler and R. L. Kiesling. Department of Plant Pathology, North Dakota State University, Fargo, ND 58102.

Inheritance of resistance to black point incited by *Helminthosporium sativum* Pammel, King & Bakke, was investigated in *Triticum durum* desf. Leeds (C.I. 13768). Golden Ball (C.I. 6627) was used as the susceptible parent in reciprocal crosses to Leeds. Segregating populations from reciprocal crosses (F<sub>2</sub>, F<sub>3</sub>, BC-F<sub>1</sub> and BC-F<sub>2</sub>) were evaluated for resistance to *H. sativum* using the green berry test. Since disease ratings for the segregating population did not fit expected Mendelian ratios, an analysis of variance was used to determine if significant differences in disease ratings existed between varieties and within segregating progeny of reciprocal crosses. Variance components were calculated to compare genetic variation of the parents to that of segregating populations. Significant differences were found between disease ratings of the two varieties and within segregating populations. Variance components of F<sub>2</sub> plants and F<sub>3</sub> families as well as BC-F<sub>1</sub> plants and BC-F<sub>2</sub> families were significantly greater than that of the parents, indicating genetic variation in the progeny greater than that of the parents. The recovery of resistant types in the segregating progeny indicated that black point resistance was heritable and could be selected from segregating populations.

## 303.

EFFECT OF PHOTOPERIOD LENGTH ON DEVELOPMENT OF *VERTICILLIUM WILT* OF TOMATO. J. P. Jones, Pat Crill and R. B. Volin, IFAS, University of Florida, Agricultural Research and Education Center, Bradenton, Florida 33505

Seedlings of 3 tomato varieties were inoculated with *Verticillium albo-atrum*, transplanted to a peat:vermiculite mix, and incubated with noninoculated seedlings in 4 growth rooms at 22 C and 600 ft c illumination. Daily photoperiod variables of 4, 8,