

Infection of wheat roots by *Gaeumannomyces graminis*, the cause of take-all, predisposes the plant leaves to more severe damage from *Septoria nodorum*. P. D. Jenkins and D. G. Jones demonstrated the predisposing effects by incubating leaves from plants with and without take-all under standardized conditions in petri dishes, with benzimidazole as a senescence inhibitor. Two methods of inoculation with *S. nodorum* were used: 1) 5-ml droplets of spore suspension were applied to detached leaves to assess lesion area and pycnidial production and 2) spore suspension was sprayed over segments of other leaves to measure spore germination and lesion numbers. Leaves from plants with take-all had more and larger lesions and more pycnidia per unit area than did leaves from plants without take-all. The predisposing effect was significant when as little as 3% of the plant's root system was affected by take-all; such plants showed no stunting or loss of chlorophyll. The authors emphasize the need to monitor root infections when breeding for resistance to foliar pathogens or making general disease surveys. (Ann. Appl. Biol. 95:47-52)

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Directions, including an illustration, for constructing microholders to place fungal propagules in direct contact with soil are given by S. E. Gochenaour and P. L. Sheehan. Polyvinyl chloride filters are placed between pairs of plastic microscope slides in which openings have been cut. The holders can be buried for several months, then cleaned, sterilized, and reused. The authors will furnish a sample slide on request. (Mycologia 72:644-646)

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Wilting symptoms in plants infected by *Phytophthora cinnamomi*, *P. cryptogea*, or *P. nicotianae* may be partially due to release of the water-soluble polysaccharides β -1,3-glucans and β -1,6-glucans from the outermost layer of the hyphae, according to J. R. Woodward, P. J. Keane, and B. A. Stone. Seedlings of *Eucalyptus sieberi* or *E. cypellocarpa* exposed to the glucans from culture filtrates of the pathogens wilted in about 30 hr at 50 mg ml⁻¹. Exposure of the polysaccharides from *P. cinnamomi* to β -1,3-glucan endohydase from

Rhizopus arrhizus produced glucose and oligosaccharides and nullified the wilt-inducing activity of the polysaccharides. β -1,3-glucan exohydrolase from *Euglena gracilis* resulted in only partial depolymerization of the polysaccharides and did not nullify their wilt-inducing activity. The polysaccharides alone do not determine pathogenicity of infecting fungi or susceptibility of the host but may contribute to disease development after a host-pathogen interaction is under way. (Physiol. Plant Pathol. 16:439-454)

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Failure of benomyl to control *Mycogone pernicioso* on mushroom farms in the United Kingdom may be due to microbial degradation of carbendazim, the fungitoxic breakdown product of benomyl. The fungicide controlled *M. pernicioso* when added to autoclaved casing but was ineffective when applied to autoclaved casing amended with 1.7% casing previously treated with benomyl and with no detectable carbendazim. J. T. Fletcher, G. Connolly, E. I. Mountfield, and L. Jacobs suggest that repeated applications of Benlate (50% benomyl and 50% inert ingredients) to casing on United Kingdom mushroom farms has selected for populations of microorganisms able to degrade benomyl. Thiabendazole, which is related to carbendazim generators, showed only a slight decline in concentration when added to casing that degraded benomyl. The inert carrier of Benlate contains 17% reducing sugar, whereas the thiabendazole product contains no sugar fraction. The authors suggest that the sugar may stimulate the benomyl-degrading bacteria. (Ann. Appl. Biol. 95:73-82)

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Four bacterial isolates (all probably *Bacillus subtilis*) applied to seed of the onion cultivar Festival, which is partially resistant to white rot, gave season-long protection against white rot in muck soil containing high natural populations of *Sclerotium cepivorum*. One isolate also protected the susceptible cultivar Autumn Spice against white rot, report R. S. Utkhede and J. E. Rahe. The bacterial isolates were from sclerotia recovered from muck soil by a wet-sieving flotation technique, and each

showed antibiosis against *S. cepivorum* in vitro. Control was more effective than that obtained with vinclozolin or iprodione applied on seed and was as good or better than that obtained with either fungicide broadcast at 5 kg a.i./ha. (Soil Biol. Biochem. 12:101-104)

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Extracts from tissues of corn, periwinkle, lettuce, or celery added to the culture medium inhibited growth of spiroplasmas, according to C. H. Liao and T. A. Chen. Tests were made with corn stunt, honeybee, and bermudagrass spiroplasmas and *Spiroplasma citri*, and each was inhibited by the extracts tested. The greater the dilution, the less the inhibitory effect. Inhibition was caused by corn plant extracts at dilutions down to 1/160 and by periwinkle extracts at dilutions down to 1/2,560. When the extract was removed, the spiroplasmas remained viable and multiplied. The authors suggest that difficulties in isolating or culturing spiroplasmas may be overcome in some cases by eliminating plant extracts from the primary culture medium. (Can. J. Microbiol. 26:807-811)

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Midday radiant leaf temperatures of plants stressed by root disease are 3-5 C higher than those of healthy plants, report P. J. Pinter, M. E. Stanghellini, R. J. Reginato, S. B. Idso, A. D. Jenkins, and R. D. Jackson. The temperature difference was detectable in mature sugar beets infected with *Pythium aphanidermatum* and in cotton infected with *Phymatotrichum omnivorum*. Plants were only moderately diseased, and aboveground symptoms were not readily apparent. A hand-held infrared thermometer was used to measure radiant temperatures of sunlit green leaves. The authors suggest that root or stem infections may be detected early by measuring radiant leaf temperatures. (Science 205:585-587)

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