

Downy mildew of lettuce caused by *Bremia lactucae* has been difficult to control with resistant cultivars because races pathogenic to the new cultivars appear rapidly. Sexual recombination has been the suspected source of these new races, but evidence for infection of lettuce by oospores has been lacking. R. W. Michelmore and D. S. Ingram of the University of Cambridge, England, have now conclusively demonstrated infection of lettuce by oospores of *B. lactucae*. Heterothallic isolates of the pathogen from different virulence phenotypes were inoculated together onto lettuce cotyledons. Oospores from infected plants were sonicated with glass beads to overcome germination dormancy mechanisms. A suspension of 1×10^3 oospores produced 144 infections. The progeny showed novel virulence phenotypes, supporting the hypothesis that *B. lactucae* is not haploid and that virulence is recessive. The results also pointed to a similarity between genetics of *B. lactucae* and those of heterothallic *Phytophthora* spp. (Trans. Br. Mycol. Soc. 77:131-137)

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Conidia of *Colletotrichum musae* grown in an iron-deficient ($\text{Fe}^{3+} < 12 \text{ ng ml}^{-1}$) medium caused faster lesion formation on banana fruit than did those grown in iron-replete ($\text{Fe}^{3+} 500 \text{ ng ml}^{-1}$) medium, report A. E. Brown and T. R. Swinburne of Queens University, Belfast, Northern Ireland. In earlier work by Swinburne and associates, germination of *C. musae* conidia was poor in water but good on green banana fruit, with the difference attributed to some association with inhibitory levels of iron in the conidia. The chelating properties of 2,3-dihydroxybenzoic acid (DHBA) naturally present on the fruit reduced iron to noninhibitory levels. DHBA has a high affinity for iron and may be a metabolic product of the anthranilic acid (AA) found in leachate of green banana fruit. Addition of AA, DHBA, or a bacterial siderophore to iron-replete conidia increased the rate of progressive lesion formation to that produced by iron-deficient conidia. Browning symptoms were fewer and antifungal compounds did not accumulate in green fruit inoculated with iron-deficient conidia or with iron-replete conidia treated with iron-chelating agents. The results indicate that iron in the conidia regulates not only germination but also the tendency of the pathogen to

become inhibited and hence latent in green banana fruit. (Trans. Br. Mycol. Soc. 77:119-124)

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Ethephon (2-chloroethylphosphonic acid; Ethrel) suppressed formation of VA mycorrhizae by *Glomus mosseae* in alfalfa (*Medicago sativa*) and in wheat (*Triticum vulgare*), report C. Azon-Aguilar, D. N. Rodriguez-Navarro, and J. M. Barea of C.S.I.C., Granada, Spain. Ethylene released by the chemical apparently caused the suppression, which occurred whether the chemical was applied to the rooting medium or sprayed on the plant foliage. At least part of the effect may have resulted from inhibition of root growth, but development of the fungus was also directly affected. Mycorrhizal formation was suppressed even after effects of Ethrel on the plants had disappeared. The possibility of the gas acting as a plant hormone was also suggested. A concentration of 100 ppm of ethylene completely inhibited spore germination of the fungus, but lower concentrations had no effect. The authors suggest that the ethylene accumulation occurring in some soils could be important in VA mycorrhizal formation. (Plant Soil 60:461-468)

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The aggressive strain of *Ceratocystis ulmi* has inflicted heavy losses to elms since its introduction into Europe in the late 1960s, destroying over 20 million elms in Great Britain alone. J. Weber of the University College of Wales, Aberystwyth, has identified a natural biological control that may explain the slower spread of the disease in northern England and Scotland. The Scolytid beetles that normally carry spores of *C. ulmi* from diseased to healthy trees bred at a much reduced rate or not at all if diseased logs were colonized by *Phomopsis oblonga*. Galleries of larvae were observed to swerve away from *Phomopsis*-colonized wood, and female beetles attempting to cut maternal galleries in such wood abandoned the effort prematurely. When given a choice between logs colonized or not colonized with *Phomopsis*, beetles invaded and reproduced almost exclusively in noncolonized logs. *Phomopsis* occurs in the outer bark of healthy elms but is limited to the western and northern parts of Great Britain. (Nature 292:449-451)

With many bacteria, the phenotype is coded genetically by one or more plasmids (circular, covalently joined molecules of DNA) as distinct from chromosomal DNA. C. I. Kado and S. -T. Liu of the University of California, Davis, have developed a rapid procedure for detecting and isolating both small and large ($2.6\text{--}350 \times 10^6$ daltons) plasmids harbored in species of *Agrobacterium*, *Erwinia*, *Pseudomonas*, *Xanthomonas*, and other bacteria. The method uses alkaline (pH 12.6) sodium dodecyl sulfate at elevated temperatures, which denatures chromosomal DNA but not plasmid DNA. Protein and cell debris are extracted with phenol-chloroform, and the clarified extracts are used directly for electrophoretic analysis. Plasmids recovered in this manner can also be used in nick translation, restriction endonuclease analysis, transformation, and DNA cloning experiments. Other available procedures are more time-consuming. (J. Bacteriol. 145:1365-1373)

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Crotalaria spectabilis as a trap plant (17 or 34 plants/m²) decreases populations of juveniles of *Meloidogyne incognita* as effectively as soil treatments with Nemagon 20G (granules with 20% dibromochloropropane applied at rates up to 9 g/m²) or Basamid (powder formulation with 85% dazomet applied at rates up to 75 g/m²). Each treatment reduced total population by 90% after 2 mo. When *C. spectabilis* plants were removed after 2 mo and replaced by *Meloidogyne*-susceptible okra, *M. incognita* populations did not increase. Nematode populations increased rapidly, however, in soil planted to okra 2 mo after treatment with Nemagon or Basamid, report C. S. Huang, R. C. V. Tenete, F. C. C. DaSilva, and J. A. R. Lava of EMBRAPA, Brasília, Brazil. *C. spectabilis* had no effect on *Helicotylenchus dihystrera*, another nematode included in the study. (Nematologica 27:1-5)

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