The mode of fungicidal action of metalaxyl against members of the Peronosporales in vivo may differ from that in vitro, conclude G. C. A. Bruin and L. V. Edgington of the University of Guelph, Ontario, Canada. An isolate of *Phytophthora infestans* sensitive to metalaxyl in the living host plant was resistant to the chemical in agar, and growth rate was actually stimulated on agar at concentrations up to 5 μg/ml. When exposed to sublethal concentrations of metalaxyl during 12 transfers on V-8 agar, isolates of *P. capsici* and several *Pythium* spp. acquired resistance to the chemical; however, all but one *Pythium* isolate became sensitive again after subculturing on a medium without metalaxyl. With some *Phytophthora* and *Pythium* isolates, the EC_{50} increased two to three times with each transfer onto medium containing a sublethal concentration of metalaxyl, yet no adaptation was noted for *P. infestans* or *Peronospora parasitica* maintained through successive transfers on host plants treated with sublethal doses of the fungicide. Resistance to metalaxyl generally conferred resistance to other acylalanine-type fungicides. The authors suggest that 1) fungi growing in a living plant may react differently to fungicides than when growing saprophytically and 2) facultative parasites are likely to adapt to acylalanine-type fungicides with continuous use, especially where levels are low, as in soils. (Can. J. Plant Pathol. 3:201-206)

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A chemically defined medium for culturing spiroplasmas has been developed by C.-J. Chang and T. A. Chen of Rutgers University, New Brunswick, NJ. Chemically defined media have been developed for *Mycoplasma mycoides* and *Acholeplasma laidlawii*, but media used previously for culture of spiroplasmas have contained one or more undefined components, eg, yeast extract or horse or fetal bovine serum. The defined medium, CC-494, was prepared by mixing stock solutions of the different fractions in HEPES buffer with lipid and bovine serum albumin components. Makeup of the bovine serum albumin was inferred from an analysis showing this protein to contain 582 sequenced amino acids. The authors provide the complete composition of the medium, including kinds and amounts of inorganic salts, keto acids, nucleosides and nucleotides, carbohydrates, amino acids, vitamins, lipids, and other components. The medium supported the growth of two flower spiroplasmas and a honeybee spiroplasma. One of the flower spiroplasmas was subcultured for more than 100 passages. (Science 215:1121-1122)

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Zoospores of *Phytophthora palmivora* synthesized cell wall β-glucans for 10 minutes after being triggered by agitation to encyst, report M. C. Wang and S. Bartnicki-Garcia of the University of California, Riverside. When synthesis of the β-glucans ceased, encystment was considered complete. Up to 80% of the cyst wall was noncellulosic β-1,3,β-1,6-glucan, which was also the major glucan in the walls of *Phytophthora* hyphae. The authors conclude that the particulate enzymes required for biosynthesis of alkali-insoluble (noncellulosic) β-glucans are in the zoospores before as well as after encystment. While swimming, the zoospores contained only a trace of these alkali-insoluble glucans. Factors other than absence of β-glucan synthetases are therefore thought responsible for preventing zoospores from forming a cell wall while swimming. Some mechanisms for preventing formation of cell wall polysaccharides by swimming zoospores are suggested. (Exp. Mycol. 6:125-135)

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A haploid chromosomal number of 20 has been determined for *Plasmodiophora brassicae* by J. P. Braselton of Ohio University, Athens, who used reconstructions based on electron microscopy of serial thin sections of pachytene nuclei. Previous reports based on light microscopy had suggested haploid numbers of only four or eight for *P. brassicae*. An earlier finding using the same electron microscopic technique and reported by Braselton and S. E. Harris and C. E. Miller was that the haploid chromosome number in the related *Sorophaera veronicae* was 33, not the four or eight indicated by light microscopy. The nuclei are only 2–4 μm in diameter. (Can. J. Bot. 60:403-408)

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The location and identification of N_2-fixing bacteria associated with setts (stem cuttings used as seed pieces) and roots of sugarcane have been investigated by R. J. Rennie of Agriculture Canada, Lethbridge, Alberta, working with J. R. de Freitas and A. P. Ruschel of the Centro de Energia Nuclear na Agriculture and P. B. Vose of the International Atomic Energy Agency, all in Peracicoba, Brazil. The N_2-fixing bacteria occurred naturally on the setts and could be eliminated by surface sterilization. The main site of N_2-fixation, however, was on or in the roots. The bacteria apparently colonized the roots and multiplied there, beginning with emergence of the roots from the setts. The main types, based on results from 75 biochemical tests and a computer-assisted scheme for identification, were facultative anaerobes of the Enterobacteriaceae and Bacillaceae. *Klebsiella pneumoniae, Enterobacter cloacae, Erwinia herbicola,* and *Bacillus polymyxa* were inside the setts and roots; *E. herbicola* was the dominant isolate on the root exterior. *Beijerinckia* and *Azotobacter* spp. were not found. (Can. J. Microbiol. 28:462-467)

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Irrigation scheduling is becoming increasingly important as a crop management tool to maximize yields while conserving water. Such scheduling can also help control some plant diseases. K. L. Clawson and B. L. Blad of the Center for Agricultural Meteorology and Climatology at the University of Nebraska, Lincoln, have shown that canopy temperature variability (CTV), determined in the crop with a hand-held infrared thermometer, can be used to schedule irrigation. CTV was less than 0.7 C in a well-watered plot. The value became progressively greater in nonirrigated plots as the temperature difference between well-watered and stressed plants increased, until a critical stress level was reached beyond which CTV values were again stabilized. CTV values greater than 0.7 C indicated the need to water. At the end of the growing season, 283 mm of irrigation water had been applied to the well-watered plots and the profile remained near field capacity. In the plots irrigated by the CTV scheduling method, only 127 mm of water had been added and all water available in the soil profile had been extracted by the crop. Yields in the CTV plots were slightly—but not significantly—lower than those in the well-watered plots. (Agron. J. 74:311-316)

Recent reports from fields related to plant pathology for inclusion in *Scientific News* may be sent to R. James Cook, 367 Johnson Hall, Washington State University, Pullman, WA 99164.