For several decades, farmers in an area of Ayrshire, Scotland, have planted potatoes early and in near-monoculture. Such potatoes escape much of the potential damage from the cyst nematode; soils are too cold at planting time for hatching of the nematodes and the potatoes are harvested in mid-June before the nematodes are fully mature. This cultural practice, however, may be selecting for a population capable of hatching at low temperatures, according to W. M. Hominick. Field-collected and F_1 cysts from a farm where potatoes have been planted early nearly every year since 1946 hatched faster at 10 C than did those from a nearby farm where potatoes have been planted intermittently and later. Results suggest that the cultural practices and not the weather are exerting the selection pressure. (Nematologica 25:322-332)

□□□

During two wet seasons, oxygen concentrations in the top 15 cm of soil were significantly higher in direct-drilled plots than in ploughed plots, report R. J. Dowdell, J. R. Burford, and R. Q. Cannel. Ploughing about 20 cm deep was followed by preparation of a good seedbed. The mean concentrations of oxygen were 10.2 and 7.2% (v/v) in direct-drilled and ploughed plots, respectively. The difference was attributed to a system of larger and more continuous pores and channels in the direct-drilled plots. These results have implications bearing on how tillage or no-tillage may affect soilborne pathogens. (J. Soil Sci. 30:239-245)

□□□

Evidence for the occurrence of diploidy in *Phytophthora infestans* comes from work in the U.S.S.R. reported by V. B. Kulish and Y. T. D'yakov. Mutant strains with resistance to different inhibitors (streptomycin, acriflavine, and oxytetracycline) were inoculated together on media containing two inhibitors each; hyphae that grew on the media were isolated. Heterokaryosis was eliminated as an explanation for growth on a two-inhibitor medium because progeny from single-nucleus zoospores from the double-resistant strains were also double-resistant. Evidence for heterozygous diploids was obtained through genetic analyses of segregants and by the fact that nuclei in the assumed diploids were double the volume and had double the DNA content of those in original strains. The diploid strains were weaker in pathogenicity than the original mutants. The authors suggest that although diploid nuclei probably are not accumulated in nature owing to weaker pathogenicity, diploidy, mitotic crossing over, and haploidization are possible and may provide a natural mechanism for development of new races of the fungus. (Dokl. Biol. Sci. 244:689-691)

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Conidia of *Aspergillus heterocaryoticus* occur in two colors, brown and white. The genes for color occur on two unlinked loci. C. E. Caten reports that two recombinants arose in crosses, one with green conidia similar to those of *A. amstelodami.* Irradiation of typical *A. amstelodami* produced brown and white mutants very similar to the respective forms of *A. heterocaryoticus.* Formal analyses showed that the major feature separating these two taxa is conidial color, determined by one or two genes. It was concluded that strains of *A. heterocaryoticus* should be considered variants of *A. amstelodami* and not a distinct taxon. These findings have important implications bearing on the broader question of specification in fungi. (Trans. Brit. Mycol. Soc. 73:65-74)

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A study at the International Rice Research Institute (IRRI) traced the diffusion of genetic materials used as parents for rice breeding in 14 research centers in seven Asian nations. The study, reported by T. R. Hargrove, covered 1965–1975. Taichung Native 1 (TN1), released in the People's Republic of China in 1965, was the first widely grown semidwarf rice cultivar. IR8 was widely grown in many countries after its release by IRRI in 1967. TN1 and IR8 were popular parents during 1965–1967, being used in about 20% of the crosses made by rice breeders in the study area, but by 1974–1975 they had been largely replaced as parents by other IRRI semidwarfs, especially locally developed cultivars. Of the local semidwarfs, however, 76% were progeny only two generations removed from IR8 or other IRRI cultivars. More than 80% of the 1974–1975 crosses carried the DGWG gene for dwarfism used in TN1 and IRRI cultivars. (Crop Sci. 19:571-576)

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Both *Nephotettix cincticeps* and *N. virescens,* common leafhoppers in rice fields of temperate and tropical Asia, respectively, are vectors of rice transitory yellowing virus (RTYV), whereas *N. cincticeps* but not *N. virescens* is a vector of rice dwarf virus (RDV). These two species have been hybridized in Japan, using *N. virescens* as the female, report I. Hitoshi, J. Hirao, and A. Kawai. The F_1 hybrids were male sterile, but F_1 females backcrossed with males of either species. Only 3% of the progeny in one test and none of those in a second test transmitted RDV, whereas 0 and 30–40% of *N. virescens* and *N. cincticeps,* respectively, transmitted RDV. RTYV was transmitted by 17% of the hybrids. The workers conclude that the gene(s) for ability to transmit RDV is inherited by the hybrid from the male side and that different and independent genes control the respective virus-vector relationships. (Appl. Entomol. Zool. 14:293-302)

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Mycorrhiza formation on white pine seedlings 1–15 yr old from the north central Sierra Nevada is better in mineral soil that is disturbed and missing the 0 and much of the A_1 horizons than in nearby undisturbed soil with the organic layers present. These findings are contrary to previous impressions that mycorrhiza formation is better in humus than in lower layers of mineral soil, report I. F. Alvarez, D. L. Rowney, and F. W. Cobb, Jr. They point out that earlier research was done on old trees with root systems that extended across several horizons and on which mycorrhiza possibly formed first in the mineral layers. (Can. J. For. Res. 9:311-315)

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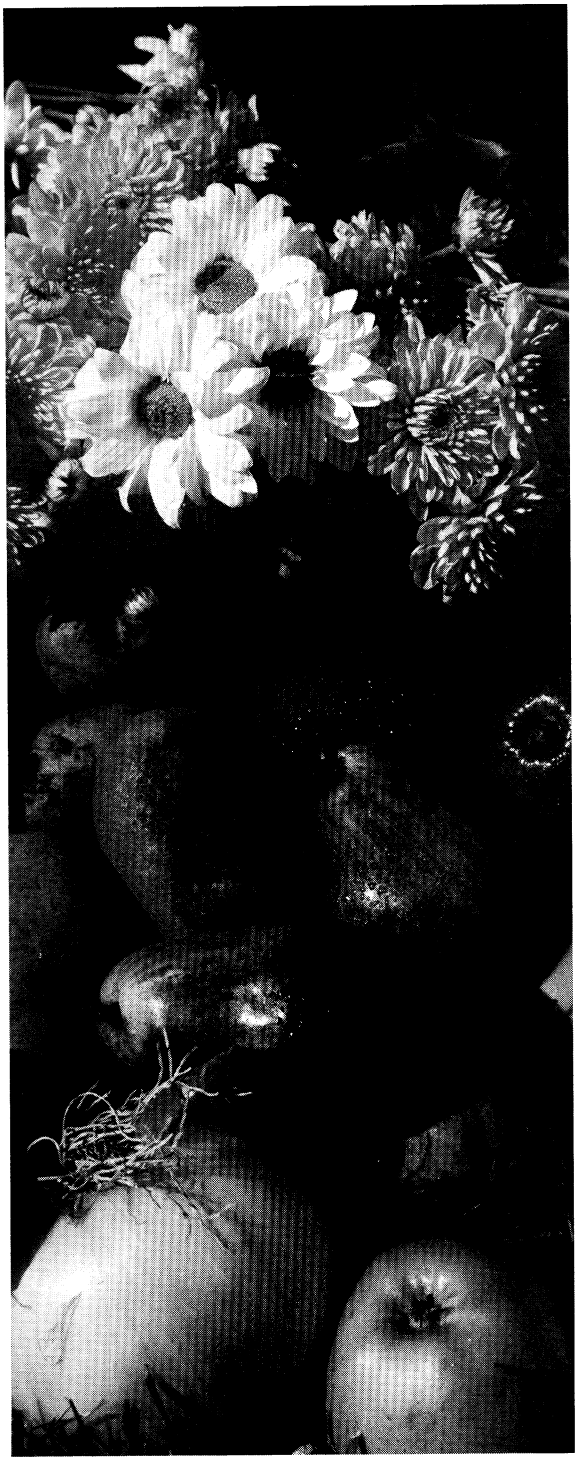
Bacteriophages of *Rhizobium* are common in the rhizosphere of legumes, but their effect on susceptible strains is unknown. Work in Australia reported by J. Evans, Y. M. Barnet, and J. M. Vincent indicates a potential for bacteriophages to influence the success or failure of susceptible strains. Under controlled conditions, a virulent bacteriophage in the root zone of clover reduced the rhizoplane population of a susceptible strain of *R. trifolii* and resulted in variant rhizobia less susceptible to the phage but also less effective in symbiotic fixation of nitrogen. The presence of bacteriophages also favored nodulation by a resistant but otherwise less competitive strain of *R. trifolii.* (Can. J. Microbiol. 25:968-973, 974-978)

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.

Methods for Evaluating Plant Fungicides, Nematicides, and Bactericides



Developing new chemicals for control of nematodes, fungi, and other organisms that cause plant diseases is an expensive, time-consuming process. Scientists in industry, university laboratories, experiment stations, and government agencies cooperate to ensure that new chemicals are safe for use, are effective for control of target organisms, and do not affect the environment adversely.

Procedures for testing efficacy of new chemicals have evolved gradually over many decades. Relatively few, however, have been published in sufficient detail so that others can use them. *Methods for Evaluating Plant Fungicides, Nematicides, and Bactericides* is a collection of chapters that describe in detail the procedures being used to evaluate the effectiveness of new chemicals for plant disease and nematode control. Many experienced investigators have pooled their knowledge and experience to prepare detailed accounts of procedures that they have found effective for testing the effectiveness of new chemicals.

Methods for Evaluating Plant Fungicides, Nematicides, and Bactericides will be a useful reference for many different interests. Students will find the book helpful in learning fundamental principles of field and greenhouse testing procedures. Practicing plant pathologists and nematologists will be able to improve their own test programs through the experience and practices of their colleagues. Scientists in federal and state regulatory agencies will find the book to be a valuable source of information about the nature of testing procedures used at the experiment stations where efficacy is evaluated. Researchers in industry will find the book useful for their chemical screening programs as they search for new, useful compounds.

One of the primary objectives of *Methods for Evaluating Plant Fungicides, Nematicides, and Bactericides* is the compilation of knowledge and experience of investigators who have engaged in various aspects of chemical testing for many years. Individuals who are authorities on questions related to pesticide evaluations have written the various chapters. The principles contained in this book are applicable to most situations encountered in greenhouse and field test plots.

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