Carbon dioxide is essential for colony initiation by the flax rust fungus, *Melampsora lini*, when cultured in vitro, according to R. Boasson and M. Shaw of the University of British Columbia, Vancouver, who grew cultures of *M. lini* under constant streams of gases of known composition. No colonies formed under CO_2-free air, and colony initiation was delayed under normal air with 0.03% CO_2. Colony initiation was the same under air containing 1% CO_2 as in plugged nonaerated controls. A concentration of 1% CO_2 was thought to be above the optimal level for colony initiation but may be more nearly the concentration encountered by the pathogen within the leaf of the host. (Can. J. Bot. 59:1621-1622)

□ □ □

To determine the distribution and importance of *Bacillus penetrans*, a pathogen of nematodes recently described and named by R. Mankou of the University of California, Riverside, V. W. Spaull of the South African Sugar Association Experiment Station, Mount Edgecombe, Natal, examined nematodes from 124 sugarcane fields in Natal and southeastern Transvaal. Thirteen species of nine genera were infected with *B. penetrans*. *Pratylenchus, Helicotylenchus,* and *Scutellonema* were found in 90% of the fields, and spores of the bacterium were observed on 30, 58, and 72% of the individuals of these genera, respectively. Infections were of two types: small lesions 2.9–4.4 μm in diameter and 1–2 μm deep in the cuticle of some nematode species and large lesions 4.3–6.6 μm in diameter and 2 μm deep in others. The author concludes that bacterial spore parasites are common and may regulate populations of some plant-parasitic nematodes associated with sugarcane in South Africa. (Nematologica 27:244-245)

□ □ □

European chestnut trees in Italy have been recovering from chestnut blight in recent years owing to loss of virulence in the pathogen (*Endothia parasitica*) followed by healing of bark cankers. Loss of virulence (referred to as conversion to hypovirulence) has been attributed to dsRNA mycovirus, which is spreading naturally in populations of the pathogen in Italy and is being used in France for biological control of *E. parasitica*. Hypovirulent strains of *E. parasitica* are present in the United States but there is no evidence of spread within the population of *E. parasitica* on American chestnut trees in U.S. forests. Previous work indicated that dsRNA components from a French hypovirulent strain transferred to dsRNA-free strains did not persist when the converted strain was subcultured. S. L. Anagnostakis of the Connecticut Agricultural Experiment Station, New Haven, presents evidence to dispose of this possible barrier to use of hypovirulence for biological control of blight. The dsRNA components of a French and Italian strain were transferred into separate cultures of the same dsRNA-free virulent strain and the converted strains were then used to convert six virulent U.S. strains representing three vegetative compatibility groups. The major dsRNA components were faithfully transferred in all conversions and persisted in the cytoplasm of the converted strain during subculturing. The results suggest that either strain can be used to control chestnut blight. (Exp. Mycol. 5:236-242)

□ □ □

Infection with vesicular-arbuscular (VA) mycorrhizae may enhance the water status or drought tolerance of plants, but the physiological mechanisms contributing to these effects are largely unknown. M. F. Allen and associates of the University of Wyoming, Laramie, studied the mechanisms, using *Bouteloua gracilis*, a dominant rangeland grass in western North America with VA mycorrhizae infection frequencies of 88–100% in the field, and *Glomus fasciculatus* as the mycorrhizal symbiont. Mycorrhizal infection increased transpiration rate by more than 100% and lowered leaf resistance to water vapor diffusion by 50–70%. On the other hand, leaf resistance to water vapor diffusion was higher in the dark for mycorrhizal plants than for nonmycorrhizal ones, suggesting that stomata close more tightly or the cuticle is better developed in mycorrhizal plants. Photosynthetic rates under light-saturation conditions increased 68% owing to 33% reduction in stomatal resistance and 67% reduction in mesophyll resistance to uptake of CO_2. Mycorrhizal plants were more efficient in uptake of water but root biomass was unaltered. Whole-plant resistance to conductivity of water was lower for mycorrhizal plants, so more water was conducted to the tops. (New Phytol. 88:683-693)

□ □ □

The DNA from cauliflower mosaic virus (CaMV) has potential for introducing foreign DNA into plants. The genome of CaMV is a circular double-stranded DNA and has been sequenced. To be a useful molecule vector, CaMV must have sites in the genome where foreign DNA can be inserted without causing loss of infectivity and must control expression of the inserted DNA. S. H. Howell, L. L. Walker, and R. M. Walden of the University of California, San Diego, inserted the entire CaMV genome into a bacterial plasmid, then used the recombinant plasmid for in vitro generation of small insertion and deletion mutations in cloned CaMV DNA. The CaMV DNA-containing portion of the plasmid was recovered by a digestion procedure and used to inoculate turnip plants. Most modifications of the CaMV genome were lethal to the virus, ie, blocked production of virus particles or symptom development, but one with a linker insertion infected the plants. Moreover, the virus particles contained the linker inserts. When two mutant viral genomes having nonoverlapping modifications were inoculated in pairs, some pairs "rescued" each other, ie, caused infection and produced particles. However, when CaMV DNA as a vector of foreign DNA is used with a helper viral DNA, the foreign DNA may be expelled from the vehicle by recombinational events. (Nature 293:483-486)

□ □ □

Pseudomonas tomato, a leaf and fruit pathogen of tomato, also inhibits germination of seeds and causes damping-off of seedlings when present as soilborne inoculum, according to Y. Bashan and Y. Okon of the Hebrew University of Jerusalem, Rehovot, Israel. When added to natural or sterilized soil or peat pellets, the pathogen damaged and killed germinating seeds and seedlings in proportion to the amount of inoculum. Cultivars most susceptible to the bacterial speck caused by *P. tomato* were also most susceptible to damage from soilborne inoculum. Nonpathogenic *P. fluorescens* added to soil did not damage tomato seedlings. Because tomatoes are sown in excess, inhibited germination and damping-off are not considered important currently but could become significant if expensive seeds of F_1 cultivars are used. (Ann. Appl. Biol. 98:413-417)

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.