The hypothesis that unattenuated ultraviolet radiation precluded colonization of land during the pre-Phanerozoic (from 3.5×10^9 until about 0.6×10^9 years ago) is no longer tenable, according to M. B. Rambler and L. Margulis. The investigators showed that obligate anaerobic bacteria are highly resistant to unattenuated ultraviolet irradiation, relative to facultative anaerobes and aerobes. Moreover, the effects of irradiation with lethal doses of ultraviolet were reversed by visible light (photoreactivation) and also in the dark by an enzymatic ultraviolet repair process (dark repair). The authors propose that these ultraviolet responses of obligate anaerobic bacteria are legacies of pre-Phanerozoic conditions, when ultraviolet attenuation would have been nonexistent and the pressure for protection and efficient repair mechanisms would have been intense. (Science 210:638-640)

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The herbicide barban (4-chloro-2-butynyl *N*-[3-chlorophenyl]carbamate), either alone or formulated as Carbyne, inhibited nitrification for at least 18 wk when applied to soil at 200 ppm. Carbyne is used as a postemergence treatment for wild oats and certain other grasses. Neither *Nitrosomonas* nor *Nitrobacter* could be detected in the soil during the period of inhibition, report P. Quilt, E. Grossbard, and S. J. L. Wright. The solvent in Carbyne inhibited nitrification only during the first 2 wk, supporting the conclusion that barban alone or combined with the solvent as Carbyne is essential for prolonged inhibition of nitrification. The herbicide apparently had no affect on ammonification in soil, either from breakdown of organic matter or from reduction of nitrate. The authors conclude from the rates used, although relatively high except for isolated pockets, that either Carbyne or its ingredients have the potential to affect nitrification in soil. (J. Appl. Bacteriol. 49:255-263)

□ □ □

Mating type in the flax rust fungus, *Melampsora lini*, is not a simple (+) and (−) system. G. L. Lawrence in Australia suggests that genetic control of mating in this pathogen is similar to that of the wood decay fungus, *Schizophyllum commune*, with two determining factors, each controlled by two linked loci. The assumption that mating in heterothallic rust fungi is controlled by two alleles at a single locus dates back to 1927, when J. H. Craigie proposed the theory for sunflower rust and wheat stem rust. The genetics of mating may need reexamination in all heterothallic rust fungi. (Science 209:501-503)

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Because cauliflower mosaic virus (CaMV) is one of the few plant viruses containing double-stranded DNA, its potential in genetic engineering of plants has attracted attention. Such research requires the use of cloned CaMV DNA, but previously plants could not be infected by cloned CaMV DNA. S. Howell, L. L. Walker, and R. K. Dudley now report successful infection experiments with turnips using CaMV DNA cloned in a bacterial plasmid (Sal I site of bacterial plasmid pBR 322). The cloned viral DNA, which had to be excised from the recombinant plasmid, lacked the single-stranded breaks that occur in DNA obtained directly from the virus, but the breaks were reintroduced into the viral genome during virus multiplication in the plant. The experiments should open new opportunities for CaMV as a molecular vehicle in plants. (Science 208:1265-1267)

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Attachment of bacterial cells to plant cell walls is believed to be an important initial step in the recognition process between host and pathogen. One mechanism of recognition is by the lipopolysaccharide component in the bacterial wall, which binds to a specific lectin receptor site in the host plant cell wall. W. F. Fett and L. Sequeira isolated a previously unknown glycoprotein from seeds of the soybean cultivar Clark that agglutinated *Xanthomonas phaseoli* var. *sojensis*, the causal agent of bacterial pustule of soybean. This ability suggests that the glycoprotein in vivo may function to bind the cells to the host cell wall. The agglutinin was inactive against *Pseudomonas glycinea*, the causal agent of bacterial blight of soybean, however, and agglutination and pathogenicity were not correlated among several strains of *X. phaseoli* var. *sojensis*. The hypothesis that a compatible interaction results from binding of virulent cells of *X. phaseoli* var. *sojensis* to mesophyll cell wall surfaces by the Clark agglutinin could not be supported. (Plant Physiol. 66:847-852 and 853-858)

□ □ □

Cephalosporium gregatum causes brown stem rot of soybean in the United States and Mexico and brown stem rot of adzuki bean (*Phaseolus angularis*) in Japan. The soybean isolate from the United States is pathogenic only on soybean and mung bean (*P. aureus*), whereas the adzuki bean isolate in Japan is pathogenic on adzuki and mung beans but not on Japanese soybean, according to K. Kobayaskahi and T. Ui. Comparative studies involving one isolate each from the United States and Japan showed growth rate and cultural and morphological characters to be the same, as well as production of gregatins (wilt-inducing toxins). The authors suggest the need to differentiate these two fungi into formae speciales. (Ann. Phytopathol. Soc. Jpn. 46:241-246)

□ □ □

Two soils suppressive to Fusarium wilt described in France are referred to as Siagne and Châteaurenard. Suppressiveness results from the natural soil microbiota. According to C. Alabouvette, R. Tramier, and D. Grouet, the suppressiveness of one or both soils can be transferred to control Fusarium wilts of horticultural crops. As little as 10 parts Châteaurenard soil mixed with conducive soil reduced Fusarium wilt of cyclamen, muskmelon, and tomato. A mixture of 20 parts Siagne soil with 100 parts steamed peat, peat + vermiculite, or peat + pouzzolane totally controlled Fusarium wilt of carnations. (Ann. Phytopathol. 12:83-93)

□ □ □

The frequent failure of the cereal cyst nematode, *Heterodera avenae*, to increase in England under intensive cereal culture is attributable to nematode parasitic fungi, particularly *Nematophthora gynophila*, according to B. R. Kerry, D. H. Crump, and L. A. Mullen. The nematode multiplied in soil drenched with a solution of formaldehyde lethal to the parasitic fungi but not to females of the cereal cyst nematode. The nematode also multiplied greatly when female nematodes were exposed on roots but soil was too dry for zoospores of the parasitic fungi to move. The authors conclude that parasitic fungi, especially *N. gynophila*, can limit the cereal cyst nematode population, depending on adequate soil moisture. (Nematologica 26:57-68)

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