A method using recombinant DNA technology has been developed by R. Owens, D. Cress, and T. O. Diener of the Agricultural Research Service, USDA, Beltsville, MD, to screen potato for potato spindle tuber viroid (PSTV). A complementary DNA (cDNA) copy of the viroid RNA is made and inserted into the genome of *Escherichia coli*, cloned, and then labeled with a radioactive marker. Potato homogenate is fixed onto a thin membrane filter and incubated with the labeled cDNA. Photographic film is used to detect the radioactive spots where PSTV and the cDNA have combined. The test is rapid and can be automated. (Agric. Res. 30(4):8-9)

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Conidial germination in the spinach downy mildew fungus, *Peronospora farinosa* f. sp. *spinaciae*, has a "two-topped" temperature response curve, according to H. K. Frinking, C. F. Geerds, and F. Meerman of the Agricultural University, Wageningen, Netherlands. Germination shows one temperature optimum in the range of 8 to 15 C and another at about 25 C. Germination was depressed at 20 C compared with 15 and 25 C for each of three races tested. The authors speculate that the irregular temperature response may reflect different types of conidial germination by the fungus. (Neth. J. Plant Pathol. 87:163-165)

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Plant pathologists frequently have need in their experiments to control relative humidity by using salt solutions in sealed containers, but the slow rate of equilibration can be a problem. According to S. Henderson and S. W. Pixton of the Ministry of Agriculture, Fisheries and Food, Berkshire, England, equilibration time can be accelerated greatly by reducing the atmospheric pressure to about 0.8×10^{-4} Pa (nearly a vacuum). They point out that according to physical laws the water activity of solutions is independent of atmospheric pressure. Wheat seeds were equilibrated over three saturated salt solutions—potassium acetate, magnesium nitrate, and potassium nitrate—to provide, respectively, 22, 53, and 93% relative humidity. The seeds equilibrated with the different relative humidities in about half the time or less under reduced atmospheric pressure than under normal pressure. Evacuation of air from the spaces in the seeds facilitated passage of water vapor through the spaces. Fungi grew on the seeds and reduced viability at 93% relative humidity but not at the lower relative humidities. The volume of saturated salt solutions used was also important. (J. Sci. Food Agric. 32:1145-1150)

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Greenhouse-produced apple seedlings inoculated with fresh endomycorrhizal roots from a woody plant, *Fraxinus americana*, before transplantation into the field grew at a significantly greater rate than seedlings fertilized with phosphorus (100 kg/ha) or unfertilized naturally mycorrhizal controls, report C. Plenchette, V. Furlan, and J. A. Fortin of Ste.-Foy, Quebec, Canada. The field site was an old abandoned pasture where no grazing or fertilization had taken place for 10 yr; unfertilized soil contained 19.5 ppm of phosphorus. Phosphorus fertilization without mycorrhizal inoculation resulted in no or only modest improvement in growth rate. The amount of nutrients in the foliage was not significantly different among the three treatments, but nitrogen, phosphorus, calcium, copper, and possibly potassium were higher in roots of inoculated unfertilized plants than in roots of noninoculated fertilized or unfertilized plants. Vesicles of endomycorrhizal fungi were uncommon in roots of noninoculated plants but abundant in roots of inoculated plants. The authors conclude that inoculation with vesicular-arbuscular mycorrhizal fungi can be beneficial to apple trees in spite of natural endomycorrhizal flora. (Can. J. Bot. 59:2003-2008)

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Velvet tobacco mottle virus (VTMoV) isolated from a native tobacco (*Nicotiana velutine*) common in central Australia may be representative of a previously unrecognized virus group, report J. W. Randles, C. Davis, T. Hatta, A. R. Gould, and R. I. B. Francki of Waite Agricultural Research Institute, Adelaide, Australia. The polyhedral particles are about 30 nm in diameter and have three protein components of molecular weights: 31,000, 33,000, and 36,000. This combination of protein components making up the particle is known for no other virus, except possibly the serologically related solanum nodiflorum mottle virus. More significantly, VTMoV contains at least three and probably five RNA components (1a, 1b, 1c, 2, and 3), all but one being linear single-stranded RNAs; RNA 2 is a circular single-stranded component that, although encapsidated in VTMoV, has the structural properties of a viroid. Third, this virus is the only known virus transmitted by a mirid bug. The authors discuss whether viroids may have originated in association with a helper virus, whether circularity of RNA has a functional significance, and whether the viroidlike RNA is a virus or a viroid. (Virology 108:111-122)

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The encapsidated viroidlike RNA in velvet tobacco mottle virus (VTMoV) present in wild velvet tobacco (*Nicotiana velutine*) in central Australia has been purified and characterized by A. R. Gould of Waite Agricultural Research Institute, Adelaide, Australia. The circular RNA 2 and the linear RNA 3 are different forms of the same nucleotide sequence, as revealed by complementary DNA analysis. RNA 3 is a "nicked" or linear form of circular RNA 2. A third RNA species, RNA 1 (actually RNA 1a, 1b, and 1c), is unique in nucleotide sequence. RNA 1a and 1b are breakdown fragments of the largest RNA encapsidated by VTMoV (RNA 1), with molecular weight of 1.5×10^6. (Virology 108:123-133)

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