we do not have adequate information about their native distribution. For example, concern was raised in the 1980s when *Bursaphelenchus xylophilus*, a parasitic nematode that severely damages native pines in Japan, was found to be responsible for the rapid death of mature pine trees in the midwestern United States (*1*). Concern lessened, however, when it was determined that it was primarily exotic, non-native pines that were dying and that the nematode was probably a North American native species.

Similarly, the soybean cyst nematode, *Heterodera glycines*, was first observed in North America in North Carolina in 1954. Records suggested that the nematode was introduced with shipments of tulips from Japan (*2*). In spite of quarantines, the nematode spread to every soybean-producing state and, in 1997, it was estimated to have reduced U.S. soybean production by 218 million bushels (*3*). Its rapid spread has led some researchers to suggest that the nematode may have been endemic to North America, existing on related weed hosts, and that its distribution expanded with increased soybean production. Another theory has implicated importation of soil from Japan in the late 1800s to obtain *Bradyrhizobium japonicum* for soybean root nodulation. Biotic surveys and inventories of native organisms are critical for the proper identification of biological invaders.

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2. N. N. Winstead *et al.*, *Plant Dis. Rep.* **39**, 9 (1955).
3. North Central Region-137 subcommittee on soybean disease losses, report on loss estimates for the U.S. 1996-1998 available at http://aes.missouri.edu/delta/research/soyloss.htm

## Silent Scientists

In their Editorial "Fending off furtive strategies" (*Science*'s Compass, 17 Sept., p. 1847), R. Brooks Hanson and Floyd E. Bloom offer an argument against the Kansas State Board of Education decision to eliminate evolution and cosmology from their curriculum requirements. They encourage political leaders who care about education to speak out on this issue. In addition, they assert that, "Science is not an attack on people's beliefs...." This is true, but the public has ample reason to think that most scientists believe otherwise.

From Thomas H. Huxley in the 1800s to John Maddox (former editor of *Nature*) and T. V. Rajan (*1*) today, many prominent scientists have asserted that evolution and cosmology render religion obsolete because they explain the origin of human beings by purely naturalistic processes. Many philosophers who work in this area and a substantial number of scientists who hold religious beliefs clearly disagree with this position. Yet individual scientists and organizations of scientists have been silent on this matter and have let the assertions of anti-religion scientists stand unopposed. Therefore, it is not unreasonable for the public to perceive that scientists are largely united in the view that evolution and cosmology render religion obsolete. On the basis of this perception, it is also not unreasonable for some people to object to having this world view presented to their children. However, the typical response of scientists to laws or policies that reflect this public concern has been to ridicule those who support such laws or policies. This only serves to reinforce the perception that scientists have an active anti-religion agenda and thus to increase the activism of opponents of evolution.

On the basis of my experience as a biology professor at a religiously affiliated college in the South, I suggest that it is possi-

ble to teach evolution without creating anti-evolution activists. All that is required is respect for people's religious convictions and avoidance of dogmatic (and unprovable) statements indicating that evolution supersedes religion. If individual scientists and scientific organizations actively promoted this message rather than mobilizing for battle, I think the wind of public support would rapidly disappear from the sails of the anti-evolution movement.

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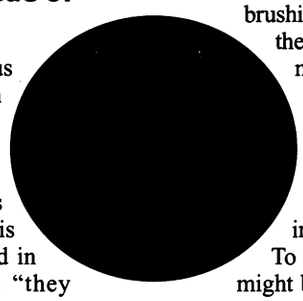
## Assessing the Spread of Engineered TMV



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In Trisha Gura's News Focus article "New ways to glean medicines from plants" (27 Aug., p. 1347), tobacco mosaic virus (TMV) engineered by Biosource Technologies Inc. to carry human genes is said to be unlikely to spread in the environment because "they [Biosource] found no detectable virus outside of plants after 2 or 3 days...." Presumably the assays were done 2 or 3 days after the plants were sprayed with TMV to infect them. One cannot make any conclusions about the likelihood of engineered TMV spreading from the plants on the basis of such assays. A more meaningful test would be to look for the spread of TMV to susceptible plants (crop or weed hosts) growing near the experimental plants throughout the time these plants are grown.

TMV is not spread from plant to plant by a specific biological vector but, rather, by mechanical means that may involve such diverse agents as the claws of aphid's feet, the hoses used to water plants in the greenhouse, and the hands or clothing of workers who touch healthy plants after handling or brushing against infected plants. Furthermore, the virus can be transmitted mechanically from the dry residue of roots, shoots, or leaves of infected plants after they die and dry out. It also contaminates greenhouse structures, where it survives to infect the next susceptible crop.

To assess the risk of release, one might better ask how far experimental plants are grown from tobacco fields in Kentucky or tomato fields in California and the precautions taken to prevent "traffic" between said fields.

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## CORRECTIONS AND CLARIFICATIONS

In Jon Cohen's News Focus article "Philanthropy's rising tide lifts science" (8 Oct., p. 214), the table entitled "A selection of science-funding philanthropies" on page 215 included the Carnegie Institution of Washington. The Carnegie Institution, however, is not a foundation, but an operating research organization. It does not accept applications for funding from scientists who are not staff members of the institution.

In Eliot Marshall's News of the Week article "Scientific groups endorse test ban" (15 Oct., p. 387), the number of countries that have ratified the Comprehensive Test Ban Treaty should have been listed as 26 (not 51), and in the penultimate paragraph, it should have said that "decoupling" a bomb test from the surrounding environment may reduce the seismic signal by as much as a factor of 70 (not by half).