CONTACT *SCIENCE*

Letters to the Editor
May be submitted via e-mail (at science_letters @aaas.org), fax (202-789-4669), or regular mail (*Science*, 1200 New York Avenue, NW, Washington, DC 20005, USA). Letters are not routinely acknowledged. Full addresses, signatures, and daytime phone numbers should be included. Letters should be brief (300 words or less) and may be edited for clarity or space. They may appear in print and/or on the Internet. Letter writers are not consulted before publication.

Subscription Services
For change of address, missing issues, new orders and renewals, and payment questions, please contact AAAS at Danbury, CT: 800-731-4939 or Washington, DC: 202-326-6417, FAX 202-842-1065. Mailing addresses: AAAS, P.O. Box 1811, Danbury, CT 06813 or AAAS Member Services, 1200 New York Avenue, NW, Washington, DC 20005 • Other AAAS Programs: 202-326-6400

Member Benefit Contacts
For Credit Card: MBNA 1-800-847-7378; Car Rentals: Hertz 1-800-654-2200 CDP#343457, Dollar 1-800-800-4000 #AA1115; AAAS Travels: Betchart Expeditions 1-800-252-4910; Life Insurance: Seabury & Smith 1-800-424-9883; Other Benefits: AAAS Member Services 1-202-326-6417.

Reprints
Ordering/Billing/Status 800-407-9190; **Corrections** 202-326-6501 **Permissions** 202-326-7074, FAX 202-682-0816

Internet Addresses
science_editors@aaas.org (for general editorial queries); science_news@aaas.org (for news queries); science_letters@aaas.org (for letters to the editor); science_reviews@aaas.org (for returning manuscript reviews); science_bookrevs@aaas.org (for book review queries); science@science-int.co.uk (for the Europe Office); membership@aaas.org (for member services); science_classifieds@aaas.org (for submitting classified advertisements); science_advertising@aaas.org (for product advertising)

Information for Contributors
See pages 99 and 100 of the 1 January 1999 issue or access www.sciencemag.org/misc/con-info.shtml.

Editorial & News Contacts
North America 1200 New York Avenue, NW, Washington, DC 20005 Editorial: 202-326-6501, FAX 202-289-7562 News: 202-326-6500, FAX 202-371-9227 • Bureaus: Berkeley, CA: 510-652-0302, FAX 510-652-1867, San Diego, CA: 760-942-3252, FAX 760-942-4979, Chicago, IL: 312-360-1227, FAX 312-360-0537, Pacific Northwest: 541-342-6290
Europe Headquarters: Bateman House, 82-88 Hills Road, Cambridge, UK CB2 1LQ; (44) 1223-326500, FAX (44) 1223-326501 Paris Correspondent: (33) 1-49-29-09-01, FAX (33) 1-49-29-09-00
Asia News Bureau: Dennis Normile, (81) 3-3335-9925, FAX (81) 3-3335-4898; dnormile@twics.com • Japan Office: Asca Corporation, Eiko Ishioka, Fusako Tamura, 1-8-13, Hirano-cho, Chuo-ku, Osaka-shi, Osaka, 541 Japan; (81) 6-202-6272, FAX (81) 6-202-6271; asca@os.gulf.or.jp • China Office: Hao Xin, (86) 10-6255-9478; science@public3.bta.net.cn • India correspondent: Pallava Bagla, (91) 11-271-2896; pbagla@ndb.vsnl.net.in

Facing Fear of Biotechnology

Roger N. Beachy

In recent years, the U.S. agricultural community has adopted new plant varieties developed through modern technologies, including genetic transformation. Some of the new varieties include plants producing an insect-toxic protein from *Bacillus thuringiensis* and plants resistant to a popular herbicide, Round-up. Benefits derived from these varieties include reduced tillage, thus saving topsoil, and reduced use of harsh herbicides and chemical insecticides that can contaminate soil and water.

The commercial use of genetically modified crops in the United States since 1993 has taken place after comprehensive scientific reviews and approval by regulatory processes in the U.S. Department of Agriculture and Environmental Protection Agency. The inclusion in foods and feeds of products such as oils, proteins, and whole grains from modified crop plants followed approval of their use by the Food and Drug Administration. During regulatory review, plant and animal scientists and members of the medical science community participated in discussions that described the technology and the results of studies related to the safety of the process and the resulting products. As a result, more than 40% of the corn, 50% of the cotton, and 45% of the soybean acres planted in the United States during 1999 will be genetically modified, reducing the use of chemical pesticides by millions of pounds.

"[H]ow can we move forward?"

In the past year, we have witnessed a growing number of editorials and articles in the popular press, first in Europe and more recently in the United States, that describe in exaggerated language the "dangers and unknown effects" of adoption of the new crop varieties and the foods derived from them. In some countries in Europe, the hysteria threatens to undermine the public's confidence in the entire food supply. Clearly, the U.S. system of review and approval failed to convince the public in Europe. Although many of the relevant technologies used in modern crop improvement were codeveloped in the United States and Europe, the response of the public to resulting products on the two continents has been very different. In Europe, factors such as concern over mad cow disease, dioxin contamination in animal feeds, lack of effective and transparent regulatory oversight, and the mistrust of government and large organizations appear to promote the current furor. The public response to field tests in Europe during the early 1990s failed to draw governmental agencies into the discussion. In contrast, the initial U.S. field tests in 1986 and 1987 followed open discussions among scientists, regulators, farmers, and environmentalists. Questions and data were shared, experiments were conducted to address concerns, and appropriate decisions were made.

To what extent are scientists to blame for the current hysteria and doubt, and how can we move forward? Today, concurrent with growing activism, some scientists report the results of poorly designed experiments that have little or no relevance to agriculture, environment, food safety, or medical reality. The popular press also often inflames rather than informs. It is important for scientists to realize that times have changed and to engage in dialogue with the public rather than retreat from it. And it is important to convey to the public that the great majority of reputable scientists working in the field consider both the processes and the products of agricultural biotechnology to be beneficial to the environment and safe for the consumer. Scientists should submit editorial pieces to the local and national press to report errors and correct misconceptions. Participation in appropriate radio and television interviews can be risky, but silence can be more so. Scientists must learn to use the news media to advance the work of science and to gain the trust of our stakeholders, including the consumer. But be prepared! Write the op-ed pieces and have them checked by a neutral party to ensure accuracy and that the message is what you intend. If scientists do not participate in the discussion, we risk encouraging a misinformed and enraged public to believe that they will not benefit from the results of our work. What a tragedy that would be, in light of the challenges facing our planet.

The author is president of the Donald Danforth Plant Science Center in St. Louis, MO.