

nature biotechnology

VOLUME 17 JULY 1999

The prince and the butterfly

Some monarchs fly on painted wings; others are propelled by hot air. Over the past weeks, both have dominated the airwaves. In May, anti-agbiotechnology partisans seized upon a short scientific correspondence in *Nature* (399, 214, May 20) suggesting that the pollen from *Bt*-modified corn is injurious to monarch butterflies in the lab (and thus to monarchs on their migratory flight paths; pp. 627). Then, in June, the would-be monarch, Charles, Prince of Wales, exonerated Arpad Putzai—he of the immune-system compromising transgenic potatoes—and declared him a much-maligned national hero. The result: another right royal and very public drubbing of genetically modified (GM) crops and foods.

Meanwhile, EuropaBio—the official voice of biotechnology in Europe—is still conspicuously mute, struggling to overcome institutional laryngitis in the face of relentless and voluminous bad agbio press. It is a terrible environment—for company leaders, for political leaders, for consumer group leaders, and for scientific leaders—in which to try to sort things out, but that is exactly what has to happen if the endless—and frequently factless—public furor in Europe is to be channeled into anything resembling informed public debate.

And so some facts: Ecological testing indicating when and under what circumstances problems might arise has already been undertaken on GM crops. Obviously, more testing can and will be done. The monarch butterfly results are extremely preliminary and require a good deal of corroboration. Ecological testing in a laboratory setting does not produce field testing results. Good ecological testing is also notoriously difficult to do—because of the number of variables involved. And any risk presented by GM crops needs finally to be assessed in the context of other forms of agricultural intervention with respect both to human health and to environmental integrity.

The original intent of genetically modified crops was to identify ways to protect crops from insects and disease that are environmentally safer than conventional chemical pesticides/herbicides. Annual pest damage to crops adds up to billions of dollars a year. Genetically engineered crops actually do make farming more efficient and more predictable—these first-generation products have intrinsic value. If the Prince of Wales' organic crops are repeatedly lost to blight or bugs, he is not in danger of losing his farm or his livelihood, an enviable position most farmers don't share. And consumers benefit too from these products—keeping the costs of crop production down keeps costs at the cash register in the supermarket down.

Consumer awareness and perception of biotechnology is media driven. Public perception can be driven in one direction or another with astonishing speed by positive or negative news reports—call it the “penicillin/Hiroshima problem”—as the pendulum swings between reports of biotechnology's saving the world and biotechnology's destroying it. We certainly have to explain what we are doing

and why to the public and to their political representatives on every possible occasion. If our message is not clear and consistent it can be overpowered by a single word—like Frankenfood. Or even an unpronounceable acronym—GM.

But is public perception fluid only because the public isn't educated about scientific matters? Not likely. Although fears and ill-founded ideas about transgenes and killer potatoes play a role, many other factors influence the public's ideas about biotechnology. Public attitudes depend on cultural, religious, and economic concerns. And some members of the public have dramatically different—and quite specific—opinions about how things like farming should be done.

Public opposition to new technologies is not a bad thing. It often helps stimulate their development, because it forces the makers of new products and services to meet consumers' needs. We need to learn to address these aspects of bringing a new technology into very old cultures—some of which have nothing to do with measuring perceivable risks down to zero—and perhaps this means calling upon the social sciences to uncover what layers of meaning are involved. Though these are “soft” issues, they are hard threats—ones that can completely disrupt the positive and worthwhile efforts of this industry.

US should rejoin UNESCO

UNESCO's summer conference in Budapest, “Science for the 21st Century” has as its designated mission the creation of a new social contract, a recommitment of its scientific efforts toward solving social problems. It is an admirable goal, and gives us a welcome opportunity to remind the United States that it is time to rejoin UNESCO (*Bio/Technology* 12:110, 1994), which has, under the leadership of Federico Mayor, addressed the concerns the United States had when it withdrew from membership in 1984. President Clinton has confirmed that all conditions have been met, and has stated that it is now simply a matter of finding the money to rejoin this organization.

And so we say to the President and the Congress and the Office of Management and Budget: Find the money, and find it in time to participate in the election of UNESCO's new Director-General this fall. UNESCO has helped spread the wealth and the benefit of biotechnological research and tools (particularly through the actions of its Biotechnology Action Council) to the countries and regions where it is most needed. It should be encouraged and assisted in its efforts to do so by the United States, the country that is biotechnology's acknowledged leader.