nature biotechnology
VOLUME 20 • NO 10 • OCTOBER 2002

The fear factor

The European Union has succeeded in ensuring that millions of Africans face the threat of starvation in the coming months. Over the summer, the leaders of Lesotho, Swaziland, Zimbabwe, Mozambique, Malawi, and Zambia—six of the nations worst affected by the recent drought—have rejected US food aid because the corn earmarked for distribution is genetically modified to be resistant to insects. It does not matter that the same corn was deemed fit for consumption in the United States. It does not matter that the EU has found no evidence that GM corn is unsafe. And it does not matter that the WHO and the Food and Agricultural Organization have reaffirmed that "it is unlikely that GM foods pose a risk to human health." The decision was based on fear and prejudice, pure and simple. And it was a direct result of the looming trade war between the EU and the United States over GM crops.

These African governments refused GM corn because they fear that Europe will ban their agricultural exports if they become "contaminated" with transgenic material from *Bt* corn. This is not really surprising, as the EU has imposed a moratorium on marketing approvals of GM crops in recent years on the basis of the questionable precautionary principle—a concept that encourages regulators to ban new products or technologies on the smallest suspicion that they could pose some unknown threat.

Of course, the EU could have stepped in and allayed the fears of these African heads of state. It chose instead to reject calls from Washington to reassure African countries that GM food is fit for human consumption. No one in Europe thought it useful to point out that member countries such as Bulgaria and Spain are growing GM corn themselves, or indeed that the EU has never declared GM food unsafe. And no one in Europe thought it worth clarifying that the main African exports, such as beef, would not be affected by the European trade restrictions. The sale of meat, milk, or eggs raised on GM fodder is not currently covered by the regulations.

Meanwhile, the WHO managed to convince five of the six African leaders of a way round this Catch-22-like impasse. At the beginning of September, Lesotho, Malawi, and Swaziland were accepting GM grain, and Zimbabwe and Mozambique had all agreed to retract their bans, provided the GM grain was milled before distribution, thereby removing the potential for contamination of indigenous crops. Zambia's leader, Levy Mwanawasa, refused to budge, however, saying he would not allow his people to eat "poison."

Around the same time, the World Bank stepped up to the plate and announced the formation of a panel headed by World Bank chief scientist Robert Watson, which is scheduled to meet in Dublin next month to examine evidence on the safety of GM food and its impact on the environment. One is left wondering what stunning new insights such a panel is going to provide.

Is there a collective amnesia about what has been going on in biotechnology for the past 15 years? Scientific panel after scientific panel after scientific panel has concluded that GM foods are safe to eat. The US Food and Drug Administration thinks they are. And even a EU biosafety report published a year ago—summarizing 15 years of research on GM products and encompassing over 81 separate studies—found no evidence that these foods pose any new risks to human health or the environment.

After 30 years of work with recombinant DNA and genetic engineering, many millions of experiments have been performed by everyone from amateurs without supervision to experts at highly sophisticated academic and commercial centers. So far, at this journal, we are aware of only a handful of published reports of adverse results. One memorable case, reported last year in the *Journal of Virology* (**75**, 1205–1210, 2001), was the creation of a mousepox virus that unexpectedly became more virulent in mice when Australian researchers introduced an interleukin-4 gene (in retrospect perhaps this was not so surprising, as interleukin-4 is known to potentiate immunogenicity). But the fact that unexpected consequences are possible should not compel us to abandon this extraordinary technology altogether. Rather it merely underlines the fact that no technology is without risk. And biotechnology is clearly safer than jaywalking or slicing bagels.

As societies in the developed world become increasingly obsessed with protecting themselves from *all* risk, real or imagined—and individuals who question the goal of zero risk are progressively marginalized by those with influence in politics and public life—we begin to enter a fantasy world (reminiscent of Lewis Carroll's childhood tales) devoid of all rational perspective. That might not matter in a society where agriculture is subsidized, food is plentiful, and daily life is concerned less with survival than with reducing calorific intake. But applying the same Alice-in-Wonderland principle of zero risk to life in the countries of sub-Saharan Africa is not only inappropriate—it is unconscionable. Wrangling over barriers to trade at the World Trade Organization is one thing. Increasing the likelihood that millions will starve is an entirely different matter.