

Directive action required

Europe's handling of applications to grow genetically modified crops amounts to bad governance.

It took many years of acrimonious debate for the European Union (EU) to agree a directive regulating the cultivation of genetically modified (GM) crops. In many member countries, the public was ready to accept genetic technologies in the service of medicine but not, as they saw it, in the service of the agricultural industry. That industry, aggressively in favour of GM crops, continues to be powerful and influential. European publics remain strongly opposed.

There was extensive consultation in formulating the directive, and science was recruited in support of each side. But six years after it was passed, not a single application has been approved for cultivation. Many EU countries are showing their continuing distaste for GM crops by refusing to grow the only one currently approved (authorized before the new rules came into effect), Monsanto's MON810 insect-resistant maize (corn). And last month, environment commissioner Stavros Dimas prepared to reject applications for two varieties of insect- and herbicide-resistant maize, from Syngenta and Pioneer Hi-Bred International, by inappropriately overturning the recommendation of his scientific advisers (see page 928).

This all highlights the problematic framework within the EU bodies. The approval process calls on the commission to make a science-based decision, gives member states the chance to decide politically on that science-based decision and then, if they can't agree, leaves the final decision entirely up to the commission. In the current cases, the commission is at war with itself, with powerful commissioners such as those for agriculture and industry trying to get Dimas to change his mind and recommend approval of the two crop varieties.

Dimas has misused science to tip the balance of his analysis of risks and benefits with which he justified his decision. Central to the process is the European Food Safety Authority (EFSA), which operates independently of the commission and the member states, and is mandated with securing independent scientific advice for them. Dimas is free to seek further, or even alternative, scientific advice. But his draft decision cites 11 papers purportedly demonstrating environmental risk that were published during the shamefully long period that the EFSA's report sat on his desk, without evaluating them in the context of the body of scientific literature. He has declined to respond to questions

about how this selection of publications was made. This is neither in the letter nor the spirit of the directive. His decision to say 'no', where the EFSA said 'yes', is a political, not a scientific, move.

At this point, whatever the commission proposes in terms of these two crop applications, the member states are unlikely to be able to decide with the necessary majority one way or the other. And so the infighting commission will make the final decision.

The directive needs to be revised to ensure that the checks and balances put in place to reassure opponents, while not crushing innovation, cannot be abused by the political motives of one side.

Most importantly, scientific input must be handled appropriately. So the proposal of German agriculture minister Horst Seehofer for a single agency dedicated to such tasks, which makes decisions based only on science and does not need to send every application for individual political approval, makes sense. This won't happen soon given the politics, but there is every reason to support the idea.

"Scientific input must be handled appropriately."

Scientists and others cannot reiterate too often that crops optimized to particular environments by genetic enhancement will be of significant benefit to societies in rich and poor countries, for example by increasing yields, allowing crops to grow in poorly fertile regions and reducing the amount of external chemical control required to maintain a healthy crop. The available evidence indicates that their potential for damaging the environment is small. Rigorous science-based risk assessment is likely to favour the cultivation of GM crops, subject to appropriate surveillance.

But whatever science indicates, member states want to protect their veto rights on crop applications because of opposition to GM crops by their publics. Benefits from the technology can be expected to become more apparent, for example in cheaper and better foods, or locally grown foods that help prevent famine. Until that time, advocates will need to persist against a strong political tide. Meanwhile, a directive that makes the fate of such crops dependent on the conflicted perspectives of individual commissioners is failing and needs repair. ■

Hollow victory

More benign global AIDS statistics do not mean that the battle against HIV is being won.

In a rare piece of good news, the Joint United Nations Programme on HIV/AIDS (UNAIDS) last month cut its estimate of the number of people infected with HIV worldwide. The revised figures brought the estimate of those infected down from 39.5 million to 33.2 million, and put the number of new infections for 2007 at 2.5 million, down

from what the agency now says was a late-1990s peak of more than 3 million per year. The revised statistics are particularly encouraging for India, where the agency says that 2.5 million people are infected with HIV, a figure that is less than half its previous estimate.

But most of this change is accounted for by more accurate sampling techniques, and the new numbers sadly reflect little significant progress in combating AIDS on the ground. That is especially true in sub-Saharan Africa where UNAIDS reports that 68% of all HIV infections and 76% of AIDS deaths now occur. In these countries, women are often unable to insist on condom use, concurrent relationships contribute to the spread of the disease, and fewer than one-third

of patients that could benefit have access to the antiretroviral drugs that can considerably extend life expectancy.

Although immunologists and virologists are making progress in understanding, for example, how HIV affects the mucosal surfaces of the body — a process that seems to contribute greatly to HIV's destructive toll on the immune system — the search for a preventative vaccine has stalled. Only this autumn, a trial for a candidate vaccine from Merck was halted because it proved to be ineffective, and actually made some subjects more vulnerable to infection (see *Nature* 450, 325; 2007). Some researchers are now claiming that disappointing lab results for this vaccine earlier in its development should have prevented it from getting to full-blown clinical trials. Those in the field have recently made attempts to ensure that new vaccine candidates meet rigorous scientific standards agreed to by the entire field — but this initiative began after the Merck vaccine had entered large clinical trials.

It seems that in vaccine development, researchers waited too long

to coordinate their efforts fully. That could provide a lesson for the parallel quest for an effective microbicide — a chemical prevention method whose use, importantly, would be controlled by women. All the results of large microbicide trials to date have been disappointing — and duplicative microbicide trials are still being planned (see *Nature* 448, 110–111; 2007). It is not clear that the most promising microbicide candidates are those that are being advanced most rapidly into trials, nor is there any consensus about what the most scientifically promising candidate would look like.

These are issues the microbicide field needs to resolve. With no vaccine in sight, the microbicide researchers are arguably those best placed to deliver something that will fundamentally alter the shape of the AIDS pandemic. That way, UNAIDS might one day deliver a downward estimate in the worldwide HIV burden that can be attributed to genuine progress against the disease, rather than to better statistical sampling. ■

Venezuela's way ahead

The opportunities currently opening up for Venezuelan science should not be squandered.

The president of Venezuela, Hugo Chávez, suffered his first electoral defeat for a decade on 2 December, when he unexpectedly lost a referendum on constitutional change that was supposed to cement his powers and accelerate socialist reform. The opposition was spearheaded by protest marches of hundreds of thousands of students, along with their professors. But the left-populist president, for all his flaws, has broadly supported universities and scientific research in Venezuela.

Chávez sees himself as the leader of a socialist revolution, modelled on the egalitarian ideals of Simón Bolívar, the Caracas-born general who led the liberation of much of South America from Spanish rule in the early nineteenth century. Chávez has nationalized major industries, including the oil companies, and has increasingly distanced Venezuela politically from the United States, its largest trading partner. Rapid economic growth has been sustained by the rising price of Venezuela's oil exports.

The Venezuelan president, while openly confronting the oil companies and other national élites, has taken steps to keep academics on his side. Like army officers, Venezuelan professors can retire at the age of 47 and receive generous pensions for the rest of their lives. Not everyone takes this up — but a sizeable fraction of the 33,000-strong academic workforce do just that. Professors also have the right to choose their own students. Their tendency to choose from the upper middle class may explain some of the student protests against Chávez's socialist government.

On the other hand, measures have been taken to strengthen the universities. In 2001, the government created a Ministry of Science and Technology, which distributes grant money on a competitive basis. And in January 2007 the Organic Law of Science, Technology and Innovation (LOCTI) came into effect, requiring Venezuela's 7,000 largest companies and commercial enterprises to pay a fraction of

their annual taxes directly to universities and public research institutes. Overall public and private spending on science has quadrupled, to US\$2.5 billion per year, the government says, reaching a very respectable 2.1% of gross domestic product in 2007.

As a result of these measures, some academics say, the Venezuelan science system is suddenly receiving more support than it can sensibly manage. Companies are investing in research projects as they see fit, without a proper system for evaluation of the proposed work. The government is now evaluating the first year of the work supported by LOCTI and must then find ways to channel more of the money into the most promising projects.

Obvious national research priorities range from infectious-disease research and rainforest ecology, to engineering and environmental problems related to oil retrieval. One problem is that few departments at Venezuela's 50 or so universities have sufficient staff and equipment to perform internationally competitive research. Another issue is that many professors are not especially interested in doing original research, as regular publication is not necessarily rewarded with promotion. Making research a prerequisite of a successful academic career — which should not end at the age of 47 — is the key to making Venezuelan science more productive.

Plans also exist to turn the country's premier research institute, the Venezuelan Institute for Scientific Research in Caracas, into a full-blown research university. This will help to produce qualified and motivated graduate students who can take Venezuelan science forward. The institute should have enough income from public and private sources to set up new centres in the Andes, the Amazon region and in the oil-rich state of Zulia in northwestern Venezuela — all of which need to raise their research profiles.

The referendum result has raised hopes that Venezuela's democracy will outlive Chávez, and build on some of his genuine achievements. The advent of stronger science at Venezuela's peripheries, as well as in its capital, is one legacy that could prove invaluable. ■

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