

# nature biotechnology

## Off the rails

**To restore its scientific credibility, the International Assessment of Agricultural Science and Technology for Development (IAASTD) should rethink its vision for biotech.**

A process intended to provide a grand unifying vision for how agriculture will meet the needs of the world's 850 million poorest over the next 50 years has developed astigmatism so severe with regard to genetically modified organisms (GMOs) that it comes close to blindness.

The IAASTD is unprecedented in scale, appropriately so, perhaps, given its lofty ambition to provide the world's leaders with a roadmap for mobilizing agricultural knowledge, science and technology to reduce hunger and poverty and encourage sustainable development. With "900 participants and 110 countries," the three-year, multimillion-dollar process was launched in 2005 under the auspices of five United Nations agencies, the World Bank and the World Health Organization. It is led by Bob Watson, former chair of the Intergovernmental Panel on Climate Change, which with Al Gore won a Nobel Peace Prize last October.

In recent weeks, the IAASTD issued its 'synthesis' report—in essence a 126-page executive summary of five separate regional reports—that will be debated line by line by government experts at the IAASTD plenary meeting in April in Johannesburg, South Africa, with ultimate publication scheduled for November.

Unfortunately, its conclusions about biotech are at best equivocal and at worst downright negative.

The IAASTD's GMO myopia was of the early-onset variety. The original plan was to have an entire chapter devoted to a "Focus on Transgenics," sharply identifying genetic modification as an important theme. As a result of lobbying by Greenpeace and others, however, the focus was muddled to a "Focus on Biotechnology," where the definition of biotech is so broad it's virtually meaningless. The chapter now endeavors to cover in 10 pages "conventional biotechnology" (meaning breeding techniques, marker-assisted breeding, tissue culture, cultivation practices and fermentation) as well as GMO approaches. Organic farming is thrown in for good measure.

The unfocused chapter then proceeds to devalue almost entirely the potential contribution that GMO technology might make. It states that the adoption of GM technology has been modest, citing a statistic that 90% of GM crops are grown in only four countries—the USA, Canada, Brazil and Argentina. This may be true, but it is also true that those four countries together with India and China between them represent over 53% of world cereal production, according to the Food and Agricultural Organization, and 93% of soy bean production.

Virtually every mention of GM crops is grudging and hedged about with doubts unsupported by data. In January, the Public Research & Regulation Initiative (PRRI), an international forum for public researchers involved in biotech, posted an open letter that cites nearly 20 instances of this kind of equivocation in the synthesis report. On environmental implications, for instance: "Long-term data [...] are at best deductive or simply missing and speculative." On cost-benefit: "the poor tend [...] to receive more of the costs than of the benefits." And

on admixture: "Seed supplies may be put at risk when they become mixed with [GM seed]..."

In short, the report and perhaps the entire IAASTD exercise appear to be an attempt to blind world leaders to any potential positive contribution from GM crops. Although this just about might be arguable with regard to the achievements of the past 10 years, the IAASTD process is supposed to be dealing with a 50-year timescale.

No surprise, then, that industry and scientific groups are crying foul. Two companies, Monsanto (part of global industry federation CropLife International that was an IAASTD donor) and Syngenta (which was represented on the IAASTD's steering committee), have quit the assessment because they feel the potential of GM technology has not been adequately reflected in the draft document.

The PRRI is backing the companies' decision. It concludes that the biotech chapter "is written from a perspective that is so fundamentally different from what we believe should have been the perspective of such an evaluation, that a submission of comments on the many technical omissions and errors would not be meaningful." It urges the IAASTD to completely rewrite the biotech section of the report. In February, The Scientific Alliance, another nonprofit organization of scientists and non-scientists, also pitched in, lamenting the report's "negative attitude toward technology, compounded in this case by a visceral dislike of international capitalism."

The major problem for the science and industry groups—and incidentally for the World Bank and US Department of Agriculture, both of which are reportedly angry at the anti-corporate stance of the report—is that they didn't engage with the process early enough or in the right manner. The IAASTD steering committee is crowded with bureaucrats and representatives from nonprofit organizations, most of whom have little reason to be knowledgeable about, and some of whom are ideologically opposed to, 'top-down' biotech solutions. It was this committee that oversaw the creation of the IAASTD reports and the process of author selection.

One author of the biotech chapter, Deborah Keith of Syngenta, dropped out during the report's preparation, citing a lack of time and dissatisfaction with the text. Of the remaining four, Jack Heinemann, Tsedeke Abate and Angelika Hilbeck have expertise in ecology, pest management and gene transfer and Doug Murray is a sociologist, with a focus on fair trade issues in the developing world. Hardly a group representative of the broad church of scientific thinking on GM crops. No surprise, then, that the synthesis report presents biotech from a highly skewed viewpoint.

When the IAASTD meets in Johannesburg, it needs to thoroughly revise its vision for biotech to include the views of industrial and public plant science researchers. Industry, which didn't keep its eye on the ball in the first place, needs to come back to the table. And the NGOs need to put aside their prejudices and not discount an approach that might just have quite a bit to offer to agriculture in the next 50 years. **LB**

cost: litigation. Over the past decade, the ICT industry has been plagued by lawsuits brought by participants in the standards-development process as well as by government regulators and affected third parties.

Two types of claims generally arise in standards-related litigation: claims that the standards process has been abused to exclude competitors from the market ('process-abuse' claims) and claims that a participant in the standards-development process should not be entitled to assert its patents against an implementer of the standard ('patent-ambush' claims).

The parameters of modern process-abuse claims were affirmed in a 1988 US Supreme Court decision, *Allied Tube & Conduit v. Indian Head*<sup>4</sup>. In this case, a group of steel conduit manufacturers joined a standards body solely to vote against a proposed amendment to the National Electrical Code that would have allowed the use of polyvinyl chloride (PVC) in electrical wiring conduits. The jury found that the steel conduit manufacturers defeated the PVC conduit standard solely for anticompetitive purposes, subverting the standards-development process and violating US antitrust laws. Numerous other cases have arisen relating to actual or alleged subversion of the standards process.

Even more prevalent in today's technology industries are patent-related standards claims. Such claims arise when a participant in the standards-development process seeks to collect royalties from vendors of products that conform to the standard. The rules of most ICT standards-development organizations require that such patents be disclosed and/or licensed to implementers of their standards. Licenses may be mandated either as royalty-free or bearing royalties, and must generally be on terms that are "reasonable and nondiscriminatory" (RAND). Such policies are designed to ensure that patent-holders who help to develop a standard do not later 'ambush' implementers once the standard has been widely adopted. If a participant in the standards process fails to comply with these rules and then seeks to enforce its patents against an implementer of the standard, the courts are likely to find the patents to be unenforceable.

In today's world of complex, high-stakes litigation, process-abuse claims and patent-ambush claims are being used in tandem and the boundary between these two types of claims has become blurred. Standards-development groups have responded by promulgating rules

and policies of increasing sophistication, both to specify procedures designed to avoid abusive activity by participants and to accommodate the requirements of participants who control significant patent assets. As chair of the Technical Standardization Committee of the American Bar Association's Section of Science & Technology Law<sup>5</sup>, I recently led a multilateral effort to develop guidelines for patent policies in the context of standards development<sup>6</sup>. We hope that these guidelines will serve as a useful resource for new and existing standards-development organizations seeking to implement legally sound policies and procedures.

To date, the biological sciences have been blissfully free of the standards litigation battles that have plagued the ICT industry. With the increasing adoption of standards

by biological researchers, however, these issues will become increasingly relevant. Thus, participants in the biological research field should take care to organize their standards-development efforts carefully and with adequate legal consideration.

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## Off the rails or on the mark?

### To the editor:

Your March editorial on the International Assessment of Agricultural Science and Technology for Development (IAASTD) Report<sup>1</sup> raises what it views are both specific flaws in content of the Biotechnology Synthesis and the extensive peer-review process under which it was developed. The editorial demonstrates fundamental misunderstandings of the process and the Report, which is both disappointing and inappropriate considering that it was published on the eve of the meeting where governments will debate the Report.

You begin by criticizing the very definition of biotechnology used in the Synthesis, complaining "the focus was muddled...where the definition of biotech is so broad it's virtually meaningless." Oddly, this is the same definition adopted in international agreements on biodiversity and consistent with your magazine's content. It would be irresponsible of the Report authors to focus exclusively on genetically modified (GM) crops at the expense of other biotechnologies that will be essential for meeting in a sustainable manner the present and future needs of the poor, hungry and malnourished.

The editorial then asserts a dispute

between the "industry" and the Report, extending that to the Synthesis authors who, it therefore concludes, must present "biotech from a highly skewed viewpoint" in contrast to a view implied to be uniform among all the different commercial activities in biotechnology and all the workers in these companies and research organizations. In contrast, the IAASTD Secretariat assembled over 900 competent authors and reviewers. How is that substantial research-based voice less credible than the few anecdotes provided in the editorial as the voice of "industry and scientific groups"?

Perhaps the most contradictory aspect of the editorial is the claim that the Synthesis is too negative on GM crops while then going on to admit that this assessment "just about might be arguable with regard to the achievements of the past 10 years." As GM crops have been in commercial production for about that long, what other evidence could the Report authors have drawn upon? The editorial implies that we already have the answers within the "broad church of scientific thinking on GM crops." What a truly curious metaphor from a piece of writing that sets itself up to be more objective than thou. That



“church” has also been used in the past to delay recognition of climate change and policy changes that might have prevented the mad cow and now the human variant Creutzfeldt-Jakob epidemics, to name a few recent examples. Why attack a Report that has been subject to the most comprehensive international peer review just because some of its conclusions do not favor the views of a small number of companies and commentator groups?

Some background to the Synthesis would be helpful for correcting misinterpretations of the process. Although the editorial asserts that the Synthesis is against GMOs (genetically modified organisms) in general and GM crops in particular, this could not be further from the truth. The IAASTD Report is original thinking developed by authors that were from the private sector, academia, government and nongovernmental organizations. The substantial Report is directly grounded in the research literature. The Synthesis, however, is not an assessment of biotechnology separate from the Report, but a representative compilation of the major issues described in the Report. It is misleading for *Nature Biotechnology* to criticize the Synthesis as “unsupported by data” because only the Report and not the Synthesis was allowed to make direct reference to the literature.

The topics chosen by the authors for the Biotechnology Synthesis were given priority based on frequency of appearance and literature citations. What the Synthesis authors could not do was invent a topic that was not in the Report. The editor was right to criticize an industry that did not contribute, or did not produce evidence to maintain, hypothetically missing topics.

Your editorial highlights the role of industry representation in the Report and Synthesis, so further clarification is warranted. As one ‘biotech industry’ representative is reported by *Nature Biotechnology* to have said, industry did not have the time—perhaps did not find this exercise important enough to make the time—to participate at the scale it supposedly now in hindsight thinks that it ought to have. The industry representative had the lead responsibility for the initial draft of the Biotechnology Synthesis, something that was willingly agreed to by all authors. However, the industry contribution appeared three weeks later than promised and only two weeks before the deadline. What finally came was an assemblage of excerpts, from only a few

places, rather than being a comprehensive survey of the themes in the Report, or wholly new opinions which had not gone through the IAASTD assessment and peer-review process. Subsequent drafts developed by the team to meet the impending deadline got no comments from the industry representative until long after the deadlines had passed. Nevertheless, the Secretariat relaxed the deadlines for the Biotechnology Synthesis, but in the end, even these extensions failed to elicit a substantive contribution from the ‘biotech industry’. In short, to argue that the industry was somehow denied their proper role in this process is to seriously misrepresent how hard other authors and the Secretariat worked to accommodate them.

The Report does not close the door on GM crops; it opens the door for this and other technologies that bring solutions suited to poor and subsistence farmers and their local communities. As far as GM crops go, even the editorial seems to muster only faint praise for what the ‘biotech’ companies have done with ten years of opportunity to apply modern biotechnology solutions to yield and intensification problems. *Nature Biotechnology* perhaps should be asking why existing public and commercial frameworks have not led to a GM crop industry that has progressed beyond “an approach that might just have quite a bit to offer to agriculture in the next 50 years.” The Report should not be dismissed just because some do not like the answers it provides.

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1. Anonymous. *Nat. Biotechnol.* **26**, 247 (2008).

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Your March editorial<sup>1</sup> on the recent International Assessment of Agricultural Science and Technology for Development (IAASTD) bemoans the report’s grudging and in places inaccurate analysis of the present and future contribution of genetically modified organisms (GMOs) to world agriculture. Another editorial<sup>2</sup> and subsequent correspondence<sup>3</sup> in *Nature* has focused more on the decision of several key players to withdraw from the team developing the report, for reasons similar to those expressed in your editorial. As researchers who made rather minor contributions to one of the IAASTD sub-

regional reports, we largely agree with your assessment of the synthesis document in this respect. We do not believe the report provides a particularly insightful picture of the potential contribution of new genomics and transgenic techniques over the next 50 years. Unfortunately, this outcome was almost inevitable given the timing of the report and the process by which the report was created.

The report’s lofty ambition was to create a consensus. However, achieving consensus depends on all participants being able to identify shared interests, being open to considering evidence relevant to these interests and being willing to compromise to reach that consensus. Shared interests can sometimes lead to a ‘politics of strange bedfellows’, but compromise becomes impossible where there are irreconcilable differences of values or ideology<sup>4</sup>. It has been clear for many years that the debate about GMOs in agriculture is not only about divergent interests but rests on fundamental differences about deeply held values.

The success of the intergovernmental panel on climate change has led to suggestions that the panel’s methods might be applicable in other areas, such as GM crop technology (e.g., John Krebs summing up at the end of an Organisation for Economic Cooperation and Development conference on GM crops<sup>5</sup>). Climate change and GM crop technology are very different, however. In the case of the former, there are some clear indicators which, if not scientifically above question, made it more likely that a consensus of opinion could be reached and showed the dramatic and immediate consequences that were likely if no action was taken. Debates and disagreements over climate change have remained focused on the validity of the scientific evidence and models, and despite the fact that there have been both interest-based and ideologically motivated attempts to challenge this evidence, there is a stable and growing consensus around a shared agenda.

Your editorial suggests that if the science and industry groups had engaged with the process early enough or in the right manner, the outcome might have been different. We believe, however, this could not have been achieved on a consensual basis. It would have required the science and industry groups to impose their will on the outcome, as has been the case in practice with the environmental groups. Where conflicts revolve around questions of competing interests, then the usual negotiation

“church” has also been used in the past to delay recognition of climate change and policy changes that might have prevented the mad cow and now the human variant Creutzfeldt-Jakob epidemics, to name a few recent examples. Why attack a Report that has been subject to the most comprehensive international peer review just because some of its conclusions do not favor the views of a small number of companies and commentator groups?

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skills, such as debates over the validity of evidence, trade-offs and compromise, can come into play. If, as is the case with GM crops, a major group of players approaches the conflict from an ideological basis, evidence is treated as propaganda, and trade-offs and compromise are treated as bribery and betrayal.

Thus far, we are seeing continuing entrenchment and even extension of ideologically motivated opposition to GM crops at the expense of evidence-based decision making, at national and international levels. This is bad for science, but it is also bad for social and economic development. The groups that are leading opposition to GM crops draw their strength

from the public and media support that they have been able to mobilize. Certainly, GMO opponents now find it difficult to change their entrenched views, but the support of the public and media may be more malleable. For example, it may be the case that, as world food shortages grow and the economic and social context changes, the possible role for a more technological, life science-based approach to food production, alongside organic and other systems, comes back onto the agenda on a more rational basis than at present.

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