
THE COSTS AND BENEFITS OF GM FOOD



Response to the Strategy Unit working papers

February 2003

Food Ethics Council
39 – 41 Surrey Street
Brighton BN1 3PB

t: 01273 766 654
f: 01273 766 653

info@foodethicscouncil.org
www.foodethicscouncil.org

Introduction

1. The five working papers review a range of economic factors relevant to future policy decisions about GM crops. Read alongside the summary of the 2nd December 'scenario workshop', they also outline how the Strategy Unit has drawn on suggestions by stakeholders and experts in designing the methodology for the economic strand of the national dialogue on GM crops.

2. This response will begin with brief comments on three specific assumptions made in the papers. It will then focus on the methodology and on the part that the economics study is expected to play within the national dialogue. The response draws on previous reports by the Food Ethics Council, which can be downloaded at www.foodethicscouncil.org/reports.htm. The reports on novel foods, the future of UK agriculture policy, and TRIPS are particularly relevant [1, 2, 3].

Questionable assumptions

3. The working papers touch on an ambitious range of issues. On at least three counts, however, their emphasis appears to clash with the available evidence.

a) The economic importance of GM crops

4. The Industry and Science paper relies excessively on 'insider' accounts of the relationship between GM crop regulation and biotechnology investment. The story-line that a permissive regulatory environment stimulates investment, and that this in turn both 'trickles down' and benefits national 'competitiveness', is well-rehearsed but not well-evidenced [4].

5. On the one hand, firms are not as footloose as industry associations would have us believe [5]. The location of prior investments and facilities is an important factor missing from the 'location of facilities' column of Table 4 (Industry and Science).

6. On the other hand, it is important not to overstate the importance of GM crops within the agricultural biotechnology sector. It is quite possible that policy incentives or positive public attitudes towards non-GM agricultural biotechnologies (Box 1 of Industry and Science) could more than compensate for any knock-on effects of a hostile reaction to GM crops. The central role ascribed to agricultural biotechnology within the economy, and to GM crops within that sector, has always been self-fulfilling boosterism as much as fact of economic life [6]. Accordingly, the Strategy Unit should examine such claims more critically.

b) Alternative agricultural science and industry

7. The Industry and Science paper makes little mention of the growth potential of non-biotech sectors related to agriculture. However, it might be plausible that economic and scientific activity could concentrate around organic agriculture, for instance. There has been rapid growth in sales and production of organic produce and research interest has been sprouting up in universities (e.g. the Tesco Centre for Organic Agriculture and Newcastle University).

8. If the organic sector is considered not to offer the same economic and scientific growth opportunities as GM, given a suitable policy environment, it is important to ask why that is. If it is because more profits can be made from investing in GM research, by shifting the process of adding value to food off the farm and into the laboratory, then we must consider whether promoting private GM research complements the UK government's wider strategy for the countryside [7, cf. 8, 9].

c) The role of science in regulation

9. Table 3 of the Environment and Human Health paper summaries areas of costs and benefits. The possibility that foods derived from GM crops might have diminished nutritional content or harmful effects on human health has been omitted. Foods cannot be tested for toxicity in the same way as drugs and current regulatory assessment relies on the questionable notion of 'substantial equivalence' [10]. The fact that this difficulty extends to non-GM food products is hardly a reason to ignore it. Rather, it calls for greater resources to be invested in food safety research and in regulatory innovation.

10. One reason for omitting human health costs, which the summary touches on, is that they are already assessed on a case-by-case basis by regulatory experts. Yet so are the environmental risks, which are given greater consideration. The point is not that foods derived from GM crops have been proven harmful. Rather, it is that ruling out this possibility exaggerates future scientific certainty, contrary to the Strategy Unit's stated aims. Instead of exploring the limits of current regulatory practice, this implicitly accepts the contested division of labour between routine 'regulation', where science is attributed a quasi-determining role, and 'policy', where broader concerns are permitted. Open-ended scenario-building cannot selectively accept claims to scientific certainty at face-value.

11. This points to a serious problem with the national dialogue. As the Strategy Unit points out, the category of 'GM crops' is not a tidy one. To evaluate them collectively one must also equally discuss numerous cross-cutting policy issues, such as agricultural policy, which a debate focused on GM crops precludes. It would therefore seem rational to assess each technology case-by-case. The problem is that the monopoly over case-by-case assessment already given to technical risk studies, to the exclusion of social and ethical concerns, is one of the few clear topics out of bounds to the national dialogue. If that does not change, then accepting the 'rational' arguments for case-by-case assessment is tantamount to continuing to evaluate them in the most instrumental terms. Until there are regulatory means for evaluating new technologies against a broader set of criteria, then the only policy route open to people who question the social and ethical implications of some GM crops is to oppose them all.

Economic indeterminacy

12. The Overview Methodology Paper (p.16) refers to a useful distinction that has been drawn between ambiguity, risk, uncertainty and ignorance [11]. It is worth adding a time-dimension to this matrix, which introduces the notion of indeterminacy. Some areas of knowledge will always remain uncertain. In many circumstances we cannot assume that 'the truth will out', given time. Past experience is a good guide to the kinds of situations where uncertainty and ambiguity are intrinsic.

13. In the past, the costs and benefits of new technologies to individual farmers have often been indeterminable. However, built into the current science-led approach to GM crop regulation is the assumption that costs and benefits other than safety are best weighed up by individuals acting freely in the marketplace. Even if we understand costs and benefits in the narrowest economic sense, it will remain impossible for many individual farmers accurately to calculate whether they profit from a new technology. This remains true even if they have been using the technology for several years and are assessing past performance rather than attempting to predict the future.

14. Researchers at Cornell University have shown how farmers using recombinant bovine somatotrophin (rBST) are on average just breaking even by using the technology [12]. rBST is an early product of genetic engineering, designed to boost milk production, that yields greater

productivity increases than those promised by most GM crops. At least half of the farmers who using the product in the Cornell study were doing so at a loss. However, the complexity of their farm systems and variability from year to year prevented either they or the economists from identifying in many cases which individual farmers were winning and which were losing. The yield increases were often not translating into profits.

15. The way to take this into account is not to supplement the scientific risk of GM crops with binding ex ante economic risk assessments. This indeterminacy, which leads to a 'technological treadmill' in agriculture, is already well documented [13]. Rather, the key is to supplement the market and scientific risk assessment with other methods of evaluating GM crops. In practice, this might mean lengthening the regulatory process, incorporating evaluative criteria such as 'fairness' into a preliminary social impact assessment, and putting in place an effective procedure for ordinary citizens to appeal against regulatory decisions [1, 2]

Feedback and interdependence

16. Although the working papers explain the role of the planned 'scenarios' at some length, their function remains ambiguous. It seems that their purpose is to explore the range of possible costs and benefits under different conditions. If this is the intention, then it is important to emphasise even more the interdependence of the factors defining the four scenarios.

a) The power of multinational firms

17. One source of interdependence is the power of the large firms that have stakes in agricultural biotechnology. Although it is important not to overstate their power (see Para. 5 above), their wealth and international scale of operation does give them leverage in dealings with national governments. Much of the controversy over GM crops concerns the influence that these firms are perceived to have in the UK. How much stronger must that influence be in the many countries that are dwarfed, in economic terms, by those same companies.

18. The working paper on Developing Countries rightly aspires to maximise the autonomy of citizens in other countries to make their own decisions about GM crops. The power of the multinational companies involved with GM means that this aim will not always best be met by a policy of non-involvement. Decisions in the UK should seek to ensure that citizens of other countries are not forced into particular policies by the UK government, and also that they are autonomous with respect to large firms. The UK government is already involved in policy-making in other countries, for instance via international trade negotiations [3]. Turning a blind eye to this existing influence and attempting to minimise overseas intervention over GM crops may actually reduce the autonomy citizens in other countries in relation to multinational firms.

b) The power of UK government

19. Beyond merely stating that "different policy decisions will make different scenarios more or less likely" (Overview Methodology, p.29), it is important to emphasise the power that the UK government wields in shaping public opinion and the international regulatory regime. The effect of government decisions may not always be direct – indeed the national dialogue is partly a response to public mistrust of government – but it is nonetheless crucial.

20. Taking this important feedback effect into account in the scenario exercises would change their function. It would put more stress on predicting the likely effects of different government decisions. It is at this point that the ambiguity of the exercise becomes more acute, because the government has not clearly defined how the national dialogue on GM crops will relate to actual decision-making. Will it inform agricultural, industrial and science policy, as the Strategy Unit's broad review of issues suggests that it ought? If so, then the scenarios must also consider a wider range of possible non-GM futures in detail. Certainly it seems unlikely to inform case-by-case assessments of particular crops, an area which the Strategy Unit and the government seem to accept as the preserve of scientific experts (see Para.11 above). The remaining possibility is that it will have no impact at all.

Economics and the evaluation of GM crops

21. Finally, it appears that the Strategy Unit's economic assessment of GM crops is a victim of its own success. In its justified efforts to avoid reducing the issue to a number-crunching cost-benefit analysis, the Strategy Unit has proposed a complex model of the food system. It encompasses a broad range of factors and leaves room for contingency. In doing so, however, it threatens to tread on the toes of the public debate. The Strategy Unit's scenario exercises promise to be, in effect, expert clones of the public debate. Will the government therefore consider the economic strand of the national dialogue to be a more rational and credible replica of the public debate, even if that is not the Strategy Unit's intention?

22. If that was to be the outcome then it would undermine the purpose of the exercise, which is for the public to evaluate GM crops. The Strategy Unit has developed a broad economic concept of value, focusing on social well-being rather than just money. This utilitarian understanding of value currently forms the basis for government decision-making on GM crops. However, as previous Food Ethics Council reports have explained, people commonly make value-judgements according to additional, non-utilitarian, criteria. These include assessments of whether a course of action respects the independence and 'autonomy' of the subjects in question, and of whether the decision is considered to be 'fair' [cf. 14]. These concepts become particularly important when scientific uncertainty prevents us from knowing the likely consequences of our actions, as is the case in this instance. Without knowing how any action is likely to turn out, utilitarian evaluations become impossible. Yet, inasmuch as the Strategy Unit papers go beyond utilitarianism, they overstep their remit. The public debate is the place to make judgements about 'autonomy' and 'justice'.

23. In short, the proper role of technical expertise in decision-making diminishes wherever uncertainty is rife. All citizens, not just the experts, are qualified to contribute. Since science is not about sure-fire facts and proving safety is impossible, as scientists themselves insist, scientific assessments should never determine regulatory decisions [15]. The optimal level of involvement by democratic institutions, such as parliament or citizens' juries, is defined in proportion to scientific uncertainty or ambiguity, also making precautionary provision for scientific ignorance.

24. This does not imply that the Strategy Unit's scenario exercises are redundant. Rather, the assessments of well-being proffered by the economic and scientific strands of the public dialogue should contribute to the public debate but remain subordinate to it. The Strategy Unit should insist that its findings are considered subordinate to the public discussion.

References

1 Food Ethics Council, *Novel Foods: Beyond Nuffield* (Southwell, Notts.: Food Ethics Council, 1999).

2 Food Ethics Council, *After Fmd: Aiming for a Values-Driven Agriculture* (Southwell, Notts.: Food Ethics Council, 2001).

3 Food Ethics Council, *Trips with Everything? Intellectual Property and the Farming World* (Southwell, Notts.: Food Ethics Council, 2002).

4 Abraham, J., and T. Reed, "Progress, Innovation and Regulatory Science in Drug Development: The Politics of International Standard-Setting," *Social Studies of Science* 32 (3) (2002), pp. 337-369.

5 Peck, J., and A. Tickell, "Neoliberalizing Space: The Free Economy and the Penal State," *Neoliberalism and the city* (2001).

6 Gottweis, H., *Governing Molecules: The Discursive Politics of Genetic Engineering in Europe and the United States* (Cambridge, MA: The MIT Press, 1998).

- 7 Policy Commission on the Future of Farming and Food, Farming and Food: A Sustainable Future (London: DEFRA, 2002).
- 8 Kloppenburg, J., First the Seed: The Political Economy of Plant Biotechnology, 1492-2000 (Cambridge: Cambridge University Press, 1988).
- 9 Pretty, J., Agri-Culture: Reconnecting People, Land and Nature (London: Earthscan, 2002).
- 10 Royal Society, Genetically Modified Plants for Food Use and Human Health - an Update (London: Royal Society, 2002).
- 11 ESRC Global Environmental Change Programme, The Politics of GM Food: Risk, Science and Public Trust (University of Sussex: Special Briefing No.5, 1999).
- 12 Tauer, L. W., "The Estimated Profit Impact of Recombinant Bovine Somatotropin on New York Dairy Farms for the Years 1994 through 1997," AgBioForum 4 (2) (2001), pp. 115-123.
- 13 Cochrane, W. W., The Development of American Agriculture: A Historical Analysis (Minneapolis: University of Minnesota Press, 1979).
- 14 Nuffield Council on Bioethics, Genetically Modified Crops: The Ethical and Social Issues (London: Nuffield Council on Bioethics, 1999).
- 15 MORI, Public Expects the Impossible from Science (MORI: <http://www.mori.com/polls/2002/science.shtml>, 2002).