biotechnology commission

Agriculture and Environment
Biotechnology Commission

## What shapes the research agenda?
### in agricultural biotechnology

**A report by the Agriculture and Environment Biotechnology Commission (AEBC)**

# Analysis of responses to written consultation

April 2005

## Introduction and Context

1. Through its past work, the Biotechnology Commission (AEBC) has become aware of a number of concerns around how decisions are made in agricultural biotechnology research, and has therefore undertaken a project to investigate *what shapes the research agenda?*

2. The project is looking at what drives the research agenda, how the various drivers are balanced, what mechanisms are used in setting priorities, and the implications of this for agricultural biotechnology research. It is focused primarily on UK-based and publicly funded research, while recognising that international and private sector influences cannot be ignored. We aim to provide recommendations to Government on potential improvements to current systems, and to influence policy in this area.

3. In October 2004, the AEBC launched a written consultation as part of its work on research agendas, writing to nearly 150 organisations and individuals and making the document available to all on the Commission's website[1]. The consultation invited comments on 14 specific questions as well as general views. A working draft of the information and analysis paper produced by the AEBC was enclosed to stimulate comment. The aim of this consultation was to help give Commission members an understanding of the full range of perspectives around agricultural biotechnology research, not only from scientists involved in research, but also from 'end users' and anyone else with an interest.

4. This paper summarises the responses received to the consultation, and attempts to identify themes and areas of interest from them. Overall, we were extremely gratified by the high quality of responses, which contained a diverse range of stimulating comments and thought-provoking suggestions. We are very grateful for these, and thank all respondents for the time and thought they devoted to our consultation.

5. The consultation is one of five modules that have contributed to our final report on agricultural biotechnology research agendas[2]. The responses have been very helpful to us in developing conclusions and recommendations. In most cases, our recommendations are supported by the findings of more than one of the modules of this workstream. The final report is peppered with cross-references to relevant data from this paper, as well as from the other modules.

## Overview of respondents

***Q1. Are you responding as an individual or on behalf of an organisation? Please give details.***

1 http://www.aebc.gov.uk/aebc/subgroups/research_agendas.shtml

2 AEBC (2005) *What shapes the research agenda in agricultural biotechnology?* **URN: 05/1078.** For electronic copies of this and the five modules, go to www.aebc.gov.uk and click on "Reports". Hard copies are available by calling the DTI publications Orderline on 0845 015 0010 and quoting the Unique Reference Number (URN) code for the paper wanted.

6. Respondents are listed in Annex 1. A total of 30 responses were received, from a variety of respondents including Government, non-departmental public bodies, research providers, Research Councils, the agriculture industry, other non-governmental organisations (NGOs), and a number of individuals. Unfortunately, no responses were received from agricultural biotechnology companies or large agri-businesses, or their representative organisations, although a number of these were invited to respond[3]. Annex 2 shows a simple statistical analysis of responses, including response rates and number of questions addressed for different categories of respondent.

7. Respondents were fairly evenly distributed among the categories described above. Half of the respondents addressed most or all of the consultation questions, while most others provided general comments that were equally welcome. Individual responses can be read on the AEBC website[4].

## Summary and key themes

8. Overall, respondents welcomed the AEBC's interest in research agendas in agricultural biotechnology, considering it an area worthy of examination. Responses did not generally fall into easily identifiable categories. In fact, respondents of a similar type disagreed unexpectedly on certain issues while those who would be expected to have a different perspective sometimes agreed.

9. A number of respondents raised concerns about the overall nature of agricultural biotechnology research, feeling that fundamental change was needed to make sustainable farming the aim. Some felt that this required a shift in focus from product development to agricultural methods and processes, and/or to a more systems-based, holistic approach.

10. Most respondents agreed that the 'advancing fundamental knowledge and scientific curiosity' driver the AEBC had identified was one of the strongest drivers behind research agendas. Research Councils said that this was one of their key objectives. Several respondents representing end users of agricultural biotechnology research, but also some research providers, expressed concerns that this focus meant that agendas were insufficiently targeted to practical applications. Responses on the balance between 'top-down' and 'bottom-up' influences pointed to a complex relationship between the two, because scientific curiosity is constrained by overall, top-down strategic direction and by the need to meet the requirements of funding bodies. Some tension was revealed between the freedom of scientists to pursue their own interests and the application of research for public good.

11. There was general agreement that wealth creation was a strong driver, and a wide range of respondents, including some research providers and NGOs, felt it was too strong. Several respondents, mainly NGOs and individuals, viewed the increasing links between the public and private sectors with suspicion. However, some

3 For example, the consultation was sent to Bayer CropScience, Monsanto and Syngenta, as well as the Agricultural Biotechnology Council, CropGen, EuropaBio and SCIMAC (the Supply Chain Initiative on Modified Crops).
4 http://www.aebc.gov.uk/aebc/subgroups/research_agendas_consultationresponses.shtml

farming industry respondents commented on the need for more market focus. Farming industry respondents also said that more private sector cooperation was needed and welcomed the LINK programmes as a relative success.

12. All respondents acknowledged the increasing emphasis on research to support Government policy and regulation. Some research providers and NGOs welcomed this, while other NGOs, and several individuals, felt that policy needs were too far removed from the fundamental objectives of public good and sustainability. This reveals some mistrust of the objectives of Government, which may be due to the wealth creation focus discussed above. Responses generally welcomed the idea of horizon scanning but felt that it needed to be an inclusive process and not overly prescriptive.

13. On mechanisms for setting agendas, Defra and BBSRC cited recent improvements. Several respondents agreed that there was a tendency for increased stakeholder involvement, though some felt that Research Councils lagged behind Government departments in this respect. There was a general agreement that more openness and transparency were needed in priority setting and some responses felt that there was a conflict here with private sector links and associated intellectual property protection.

14. Most respondents, across all categories, wanted more public engagement in decision-making and several suggested ways in which this could be made more genuine and meaningful, such as allowing participants to frame the questions asked and allowing the ethical values underlying research to be debated. Some responses, particularly from research funders and providers, commented on the practical difficulties and said that more research was needed into effective methodologies. Avoiding disproportionate influence from self-selecting groups was a concern for many.

15. Several gaps were highlighted in the AEBC's analysis so far, including research to benefit agriculture in developing countries, University research funding and the Research Assessment exercise, and charity and levy body-funded research.

## Comments on AEBC analysis paper

16. A number of respondents made comments on the issues covered by the AEBC working paper enclosed with the consultation. Specific comments are addressed under question 14 below and in a revised version of the paper[5] and will therefore not be discussed in detail in this document.

17. However, there were some comments on the general scope of the AEBC's work. While recognising that this was a constraint imposed by the AEBC remit, some expressed doubts about the limitation to agricultural biotechnology. The *British Statutory Conservation Agencies* pointed out that only a small proportion of total research spend, and even total biotechnology research spend, is agricultural biotechnology related, while *Dr Les Levidow* suggested that it would be more

5 AEBC (2005) *What shapes the research agenda? Information and Analysis Paper* **URN: 05/1082**

fruitful to look more broadly at the changing relationship between agricultural biotechnology research and agri-food research in general. *Rothamsted Research* took the view that a broad consensus of public and stakeholders already existed on the future land-management research agenda and that the AEBC's focus on areas of disagreement and on technological routes perpetuated a false impression that consensus was lacking. In contrast, *Greenpeace UK* considered that the lessons from the workstream might have an audience and significance beyond the confines of agricultural biotechnology.

18. The United Kingdom, public sector focus of the AEBC's work was also commented on. *Professor Jules Pretty* stressed the fact that agricultural biotechnology was an international activity and that work in other countries had an effect on and was affected by UK research. *Sir John Marsh* agreed and also commented that most agricultural biotechnology research was conducted in the private sector.

## Responses by question

19. The bulk of this document will consider the responses to each of our consultation questions in turn. Where comments were not explicitly linked to the consultation questions in responses, but we felt that there were links, we have allocated them to appropriate questions in our analysis below.

***Q2. Do you think the AEBC's initial analysis accurately describes the key drivers behind agricultural biotechnology research in the UK?***

20. The great majority of respondents considered the AEBC's analysis to be a good overview of the key drivers, though individual responses mentioned a number of other drivers. These are summarised below:

- *Professor Jules Pretty* commented that the key agricultural policy drivers, including CAP reform and trade liberalization, had not been made explicit. Others, including the *Institute of Food Research (IFR)* also noted these drivers.

- Under 'international competitiveness', both the *Scottish Agricultural College (SAC)* and the *British Statutory Conservation Agencies* said that competitiveness among scientists themselves was a driver in addition to industrial or economic competitiveness.

- The *Scottish Environmental Protection Agency (SEPA*) felt that environmental concern was a major driver, as shown by recent research into the environmental implications of biotechnologies.

- *Farm* noted that public aspirations for both environmental and animal welfare standards had affected food production methods and, in turn, research objectives.

- *Compassion in World Farming* noted that animal welfare did not appear as a key driver, and believed that farmed animals, as sentient beings, should be considered as stakeholders in decisions that affect them.

- The *British Statutory Conservation Agencies* and the *Nuffield Council on Bioethics* noted the importance of developing countries' needs as a driver and that decisions about research agendas in the UK could have significant implications for people in developing countries.

- Several respondents mentioned "informal" drivers and relationships that they felt had a significant but less tangible influence on research agendas. These included commercial influence and political patronage (*Soil Association, Five Year Freeze, Munlochy GM Vigil*). *David Heaf* pointed out the influence of the *Zeitgeist*, or the trends in thought and feelings among scientists at a particular time. The *Farmers' Union of Wales (FUW)* felt that a "feed-back loop" interaction between scientists and Government sometimes caused risks to be over-emphasised and noted the perception that "political correctness" and pressure from single-issue campaign groups sometimes shaped agendas.

21. Responses on the next three, closely related questions overlapped considerably and are best discussed together.

***Q3. What do you think has been the relative importance placed on the drivers that we have identified?***
***Q4. Are you aware of any significant trends/changes over time in the drivers behind agricultural biotechnology? What impact have these had?***
***Q5. Do you feel that the right balance is achieved between the drivers that you believe to be most significant? If not, please elaborate.***

22. Both the *Biotechnology and Biosciences Research Council (BBSRC)* and the *Applied Research Forum (ARF)* pointed out that the relative importance of different drivers varied considerably with different areas of research. *Dr Les Levidow* agreed and specifically distinguished risk research (where policy and regulatory concerns dominated) from innovation research (where many overlapping drivers exist).

- Advancing fundamental knowledge and scientific curiosity; maintaining/ developing the UK science base.

23. In general, respondents felt that this was a very strong driver, the importance of which had perhaps been underestimated by the AEBC. There were differing views on whether this importance was appropriate.

24. The *Natural Environment Research Council (NERC)* and *BBSRC* both said that a key driver behind their own research was to fund excellence in science to advance basic understanding. The *BBSRC's* four key drivers also included maintaining the international position of the UK biosciences and workforce training – both of which come under this driver.

25. Several other respondents, including *SAC*, *SEPA*, the *British Statutory Conservation Agencies* and *National Institute of Agricultural Botany Ltd. (NIAB)* considered advancing fundamental knowledge/scientific curiosity to be the dominant driver behind research agendas, particularly for Research Council-funded work.

26. *SAC* and *NIAB* felt that the balance of drivers was too far in favour of fundamental scientific research, with not enough attention paid to applying it. *Farm* agreed with this and also noted a perception amongst farmers that research and "cutting-edge" technologies were treated as an end in themselves rather than a step towards practical solutions. *Farm* and several other respondents also commented that this driver can lead to a self-perpetuating research agenda whereby programmes of work must be maintained for existing scientific groups within their own specialised area, whether or not they meet end users' needs.

- Wealth creation and building the 'knowledge economy'
- International competitiveness
- Private sector product and process development and 'near-market' research

27. There was general agreement that wealth creation was an important driver, though one respondent queried the use of the term knowledge economy (*David Heaf)*. Respondents including the *British Statutory Conservation Agencie*s, *IFR*, *Food Ethics Council*, *Munlochy GM Vigil*, *Soil Association* and *Royal Society for the Protection of Birds (RSPB)* emphasised the growing influence of industrial and commercial interests and many felt that there was an undue bias towards the wealth creation driver. *Dr Les Levidow* agreed, saying that public good research had been marginalised. *Sir John Marsh* suggested that the concept of wealth should be broadened to include non-material and non-financial value. *Five Year Freeze* and others thought that more emphasis should be placed on sustainable practices rather than the current focus on marketable products, though *SAC* felt that product development was a less significant driver in the UK and Europe than elsewhere in the world.

28. However, some respondents felt differently. Both the *National Farmers Union (NFU)* and the *Applied Research Forum* said that a greater emphasis was needed on market demand and translating research results into products for farmers. *Farm* and *NIAB* agreed that more applied research was needed.

- Government policy, regulation and legislation
- EU and international policy, regulation and legislation
- Social need and the public good

29. Most of those who commented acknowledged that support for Government policy and regulation was an increasingly important driver behind research agendas, though there were different interpretations of how this manifested itself and what its effects were.

*30.* *RSPB* welcomed the move to research to support policy as a step towards adhering to sustainable development principles, and felt that Research Councils needed to follow the lead of Government departments in aligning their research more closely with policy needs. *SEPA* agreed that research institutes' programmes should be firmly directed towards policy, but commented that fundamental research with

less immediate policy relevance needed to be maintained elsewhere, such as in Universities.

31. *IFR* and *Greenpeace* identified political controversy over genetic modification (GM) and other agri-food safety scares as a primary reason for the shift towards a regulatory focus for agricultural biotechnology research. *Sir John Marsh* agreed, but felt that this shift had resulted in a disproportionate investment in certain areas and a lack of new agricultural biotechnology product development, including products that would contribute to sustainable farming. In addition, the *British Statutory Conservation Agencies* and *NIAB* felt that some key policy requirements, such as the drive for sustainable agriculture, had not yet had a great impact on research agendas despite the increasing emphasis placed on policy relevance.

32. The *Five Year Freeze* and *Sir John Marsh* argued that a clear and coherent Government vision of sustainable agriculture and the public good was needed to guide research. Other respondents also pointed out that Government policy needs may not always be in line with sustainable development and the public good, and felt that the latter aims would be better drivers than the narrower political agenda of policy needs (*Food Ethics Council*, *Greenpeace)*.

33. *Five Year Freeze* and the *Soil Association* argued that currently reductionist research needed to be more open to systems-based, holistic approaches to move towards these sustainability objectives. In contrast, the *Applied Research Forum* felt that increasing emphasis on policy support must not divorce research from commercial applications. *SEPA* believed that agricultural production still dominated research agendas over environmental concerns, though *FUW* thought that maintaining food production should form the basis of research agendas.

34. There were clear signs of mistrust in Government from some respondents. For example, *Farm* reported a perception among farmers that science was used to justify Government policy, rather than to inform it. *David Heaf* considered the increasing state intervention in research agendas unhealthy as it violated the freedom of the *Geistesleben* – the spiritual-intellectual-cultural life of a society.

- Public attitudes and aspirations

35. While acknowledging the effects of the GM controversy on safety and risk research, the *British Statutory Conservation Agencies* and *RSPB* felt that the overall influence of public attitudes on research agendas was small. However, several respondents, including *Sir John Marsh*, mentioned the influence of stakeholder and special interest groups, for example in promoting research into organic farming systems. Public involvement in research agendas is discussed in greater depth under Question 9 below.

***Q6. Is the current balance between responsive mode (bottom-up) and strategically directed (top-down) research about right?***

36. Opinions differed considerably on this question, including within particular categories of respondents, such as the research community.

37. The *British Statutory Conservation Agencies*, *NERC*, and the *Scottish Executive Environment, Food and Rural Affairs Department (SEERAD)* did not disagree with the current balance but stressed the importance of maintaining both bottom-up and top-down influences.

38. *David Heaf* and *Sir John Marsh* commented that too much top-down, central control should be avoided and that more risky, exciting science should be funded. In contrast, *SEPA* welcomed increasing central scrutiny and *RSPB* and *SAC* argued that strongly bottom-up, curiosity driven agenda setting tends to remove research from beneficial applications and the public good.

39. Several respondents commented that the distinction between bottom-up and top-down was not as simple as the consultation question implied. The *Food Ethics Council* suggested that the AEBC should examine in more detail the shaping of scientific curiosity. For example, even under responsive mode funding, scientists tended towards the prevailing consensus to obtain funding and were constrained by top-down strategic direction (*British Statutory Conservation Agencies). IFR* felt that the important question was not to ask about the balance between bottom-up and top-down but how much latitude there was within the overall strategic direction, and whether research was excessively scrutinised in an unconstructive way.

40. *Five Year Freeze* took the view that scientists were a privileged elite who belittled opinions from outside their peer group, and therefore that true 'bottom-up' agenda setting should involve the end users of the research, farmers and the public. *SEPA*, *Farm* and the *Applied Research Forum* also commented that more end user engagement was needed. This leads us to the next consultation question, on mechanisms for setting agendas.

***Q7. Do you think appropriate mechanisms exist for determining research agendas?***

41. Several respondents agreed with the AEBC's analysis that current mechanisms were not entirely transparent and included an informal component. *IFR* and *Greenpeace*, among others, thought that accountability and objective justification were the crucial criteria for agenda setting mechanisms.

42. *SEERAD* said that consultation and dialogue were important and felt that mechanisms worked well if time and resources were available. *Defra* thought that steps taken following the Curry report[6] had improved coordination in agri-food research, and cited the work of their Sustainable Farming and Food Research Priorities Group[7] in involving the public in framing requirements. The *British Statutory Conservation Agencies* also considered the Research Priorities Group a positive development, though they pointed out that, at the time of writing, the

6 Policy Commission on the Future of Farming and Food (2002) *Farming and Food: a sustainable future*. See http://archive.cabinetoffice.gov.uk/farming/
7 The group published its first report on 22 March 2005. See http://www.defra.gov.uk/science/rpg/research_priorities.htm.

group had not yet reported. *Sir John Marsh* felt that Defra research priorities were sometimes slow to change, though he recognised that this was partly due to a need to maintain staff and expertise in a number of areas to be able to react to adverse contingencies.

43. *RSPB* and *SAC* also considered that Government departments, particularly *SEERAD* and *Defra,* were doing more to consult stakeholders in planning agendas. However, they felt that the Research Councils' priority setting mechanisms were still too inward looking, pointing to a poor range of stakeholder representation on Councils and advisory committees. *David Heaf* said that the strong private sector representation on the Research Councils should be eliminated.

44. *BBSRC* cited the recent establishment of seven new independent strategy panels to guide its activities, including a 'Bioscience for Society' panel which would advise the Council about public engagement, accountability and social and ethical issues, and at an equal level to other panels focusing on other drivers such as scientific opportunity and commercialisation. The panel would be made up of a majority of non-scientists and would include social scientists, consumer representatives, ethicists and NGO members.

45. A number of responses highlighted the need for coordination between funders in priority setting (*BBSRC*, *IFR*, *Applied Research Forum*). *Defra* emphasised the importance of exploiting opportunities for international collaboration. *Farm* felt that the sectoral approach to agriculture by Government and the industry had led to a fragmented approach to research strategies. Looking specifically at the levy bodies, *Farm* said that the extent to which farmers were involved in setting research priorities varied greatly between the different bodies. In environmental research, *SEPA* and *NERC* noted the work of the Environmental Research Funders' Forum[8], which aimed to provide strategic coordination between funders of environmental research.

***Q8. Is horizon scanning an important and useful tool for establishing research agendas? How significant has the Government's Foresight exercise been?***

46. All respondents who commented felt that horizon scanning was a potentially useful exercise, but there was a general view that the process needed to be as inclusive as possible. *Defra* thought that horizon scanning had an important role to play both in identifying long-term trends to take into account in agenda setting (such as global warming and demographic changes), in recognising emerging threats and opportunities and in identifying difficult issues on which early public engagement was needed.

47. *SAC* and *SEERAD* felt that horizon scanning must not be overly prescriptive and should give only broad guidance. It should be updated regularly to review new situations. *Farm* was concerned that horizon scanning sometimes led to more immediate, practical and persistent problems being neglected.

8 http://www.erff.org.uk

48. According to *Dr Les Levidow*, the output of horizon scanning depended on how questions were posed and on underlying assumptions about the definition of public interest and sustainability. *Five Year Freeze* and *IFR* said that no restrictions should be placed on inputs to horizon scanning, which should involve all sectors of the community. The *NFU* commented that early involvement of producers would help to disseminate findings more widely, and the *British Statutory Conservation Agencies* said that private sector engagement in Foresight could help agricultural biotechnology product development to keep pace with rapidly changing policy goals, which it currently lagged behind due to long lead times.

49. Turning to the Foresight exercise, *NIAB* welcomed the concept but doubted that it had had a major impact, because it had conflicted with the Research Councils' bottom-up determination of priorities. *Sir John Marsh* believed that the agriculture panel (in an early round of Foresight) had some interesting findings, but had not achieved its primary objective of encouraging businesses. The *Food Ethics Council* argued that technology foresight reduced horizon scanning to a 'pick the winner' exercise, when technological diversity, rather than a small number of champion sectors, would favour sustainability. In contrast, the *Applied Research Forum* and *Farm* commented that there was a need to connect the basic science focus of Foresight better to the applied and commercial level.

***Q9. Who should be involved in establishing policy and priorities in scientific research? Should the public and/or society more widely have a role in these decisions?***

50. Respondents generally agreed that the public should be involved in some way in setting research priorities. Views on how this involvement should happen were more variable, but there was a majority view that changes were needed to current systems.

51. As discussed above (under Question 7), several respondents commented that more stakeholder involvement was needed, including the scientific and end user communities (*SAC*), the agricultural levy bodies (*Applied Research Forum)* and representatives of developing countries' needs (*Nuffield Council on Bioethics*).

52. A number of respondents, including the *British Statutory Conservation Agencies*, *Munlochy GM Vigil* and *SEPA,* felt that the public should be more involved in setting agendas. The *Food Ethics Council* noted the conspicuous absence from current decision-making of citizens with no commercial or institutional interest in the issues, and said that there was strong evidence that involving such people would make for better decisions. They noted that their recent report recommends establishing mechanisms for participatory technology assessment[9]. *David Heaf*, *Greenpeace* and *NIAB* all discussed the recruitment of lay advisory panels whose input could be sought through deliberative processes such as consensus conferences or citizens' juries.

9 Food Ethics Council (2004) *Just Knowledge? Governing Research on Food and Farming*

53. *BBSRC*, *Five Year Freeze*, *IFR* and others commented that public engagement must not be tokenistic and should have a demonstrable impact on decision-making. *Greenpeace* suggested four clear conditions and limitations to avoid generating cynicism and mistrust: (1) decision-makers must be prepared to change to accommodate markedly different perspectives; (2) public involvement should supplement but not substitute for responsible decision-making; (3) opinions should be actively sought out, in contrast to the passive standard consultation process; and (4) the public should be allowed to frame the questions asked as well as responding to them. *SAC* and *Dr Les Levidow* argued that the scientific community must not consider attempts to address the ethical values behind their work as "anti-science", but should recognise and acknowledge these values and open them to debate. A reflective capacity, and the development of more holistic and non-reductionist perspectives, should be encouraged in scientists. In return, members of the public must be willing to look beyond personal agendas.

54. *NERC*, *BBSRC* and *SEERAD* also agreed that public engagement is necessary and *NERC* acknowledged that more is needed. *SEERAD* felt that the most appropriate stage for engagement was at the application stage and commented that public views are more difficult to incorporate at the fundamental scientific level. *SEERAD*, *SAC* and *IFR* all commented that more social research might be needed to develop workable methodologies for meaningful public engagement. The *BBSRC* agreed that finding a way to foster public engagement at the 'upstream' level, as recommended by the Government's Science and Innovation Framework[10], was a key issue. However, the *Food Ethics Council* said that there were plenty of accepted methods for public dialogue on science and technology.

55. Several respondents, including *NIAB* and *NFU,* felt strongly that methods should avoid the domination of public engagement by single-issue campaigners or self-selecting groups of people. *BBSRC* and *Rothamsted Research* specifically cited the *GM Nation?* public debate in this context. *Rothamsted Research* queried whether the current operation of institutions and the normal functions of democratic government did not already allow for sufficient public engagement. *Greenpeace* noted concerns from some that public input to research agendas would damage the freedom of 'blue-skies' research but suggested that, as the AEBC's analysis showed that most research did not fall into this category[11], only a small proportion of total spend would need to be 'protected' from public input if this was a concern.

***Q10. Are you aware of any significant gaps in the UK research agenda that have been caused by an imbalance of research drivers? For example, do you believe an emphasis on wealth creation has led to significant gaps in public good research? Has the withdrawal of Government from near-market agricultural research created gaps?***

10 HMT, DFES, DTI (2004) *Science and Innovation Investment Framework 2004-2014*
11 See charts in part 7 of AEBC (2005) *What shapes the research agenda? Information and Analysis Paper* **URN: 05/1082**

56. *RSPB* felt that the emphasis on wealth creation had undermined funding of research to deliver public goods. The *British Statutory Conservation Agencies* agreed and gave the example of using GM techniques for improving plant defences, which would reduce pollution by lowering agri-chemical inputs. Both *NFU* and *Farm* also specified crop research, feeling that more public research was needed into minority crops (i.e. those other than a few major commodity crops).

57. On near-market research, *NIAB* felt that the Government's withdrawal from near-market research had created a gap that the LINK programme, while successful, had not been able to fill. The *Applied Research Forum* said it had resulted in skills gaps, for example in genetics and plant breeding skills to exploit genomics information. The *Food Ethics Council* recommended that a distinction should be made between near-market research that promises imminent commercialisation and practically applicable research that does not have a significant commercial aspect. Several respondents thought near-market research should receive public funding only if it could deliver public goods (*RSPB*, *SEPA*).

58. While the *Food Ethics Council* said that gaps in research were hard to identify because of the lack of suitable data available on public research expenditure, individual respondents identified a few other specific gaps and imbalances. *Sir John Marsh* said that the BSE crisis had imbalanced Defra's overall research agenda in favour of animal research. The *NFU* argued that more research was needed into risk perception and acceptance of technologies by consumers. The *Applied Research Forum* identified soil science as important and said that plant physiology and pathology were at risk.

59. Some respondents had concerns about the general nature of research, rather than specific gaps. *David Heaf* and *Dr Les Levidow* felt that the emphasis on reductionist perspectives and molecular and biotechnological techniques did not best serve the public good, and along with *Greenpeace* said that more research was needed into methods and processes, rather than product development. *SEPA* and *IFR* also commented that the focus should be shifted away from agricultural production towards environmental sustainability, while *SAC* recommended more holistic, population and systems-level research. *Five Year Freeze* felt that a new Sustainable Farming and Food Research Council might be better placed to achieve these aims than existing bodies.

***Q11. Do you feel that the relationship between the public and private sector has changed, and what are the implications of this in terms of the industry influence on public sector research agendas?***

60. Views on this question varied, with some saying that public-private collaboration should be encouraged, while others commented on excessive corporate influence. Some respondents felt that increasing private sector influence increased public suspicion of publicly-funded research (*Munlochy GM Vigil, Five Year Freeze*), led to conflicts of interest (*Dr Les Levidow*, *SAC*), and reduced the role of the public

sector to one of reacting to private sector drivers (*RSPB*). *Colin Tudge* commented that not all research results of benefit to farmers are necessarily of commercial benefit, and these might sometimes be neglected under strong commercial influence.

61. However, both *NERC* and *Farm* commented on the need to cooperate with the private sector and *NERC* mentioned its various partnership and collaborative research schemes. *SAC* and the *Applied Research Forum*, among others, said that the LINK programmes had been successful in encouraging public-private collaboration, though *IFR* and *Farm* commented that there were some problems with accessibility to smaller companies.

62. *IFR* did not believe that industry influence on public research was increasing. However, they did put forward the view, shared by *Dr Les Levidow* and *Greenpeace,* that public sector research institutes themselves had undergone a culture change to a more market- and wealth creation-oriented approach.

***Q12. In your view, is the UK sufficiently supportive of research and innovation in general, and more specifically in the field of agricultural biotechnology?***

63. Most respondents who addressed this question felt that the UK was sufficiently supportive. However, the *Applied Research Forum* said the UK research base had been eroded and core skills should be recognised, protected and exploited. In addition, the *British Statutory Conservation Agencies* recognised the increase in overall support for science over the past ten years, but noted a shift away from agricultural biotechnology research specifically. *Dr Les Levidow* noted a decline in agricultural research generally.

64. Some concerns were expressed about the way that support for agricultural biotechnology was targeted, reiterating points made above. *Farm* and *NIAB* emphasised the need for more applied level research and fruitful technology transfer effort. *SAC* said that there was an ambivalent attitude to public accountability of research: financial accountability was overly tight, while the relative lack of public engagement meant that social accountability was lacking.

65. Several respondents commented that too much public money was spent on agricultural biotechnology (*Greenpeace)* and noted the opportunity cost of not investing in other areas (*Food Ethics Council*, *Munlochy GM Vigil). Five Year Freeze* felt that commercial pressures had meant that genetic modification of crops had become the dominant technology, while other techniques such as marker assisted breeding had not been widely used.

***Q13. What are the implications of the various drivers and mechanisms behind research agendas on the openness and transparency of public sector research?***

66. All respondents who commented felt that more openness and transparency were needed although some, including the *British Statutory Conservation Agencies,*

cited recent improvements. *Sir John Marsh* noted that when meetings are open, it is likely that matters will have been pre-discussed by members.

67. *Munlochy GM Vigil* and *Five Year Freeze* said that results of publicly funded research should be made available to all as a matter of course and on an equal footing. The *British Statutory Conservation Agencies* suggested establishing a protocol for web-based information on research projects. *Dr Sean Butler*, among others, felt that a conflict existed between the emphasis on private-sector collaboration/intellectual property and openness. He said that small and medium-sized companies often depended on openness to access relevant research, and that this should mean being allowed to apply that research as well as just see the results. The *Food Ethics Council* noted that science policy was not joined up in this respect.

***Q14. Are there any issues around the setting of research agendas that the AEBC may have missed?***

68. Some of the issues highlighted in responses are listed below:

- A broader examination of wealth creation as a driver, and why sustainability is not a major driver behind agricultural biotechnology. (*British Statutory Conservation Agencies*)

- Why few representatives of public concerns are invited to contribute to high-level committees – is there a lack of people with sufficient breadth of knowledge? (*British Statutory Conservation Agencies*)

- Examination of the role of parliamentary committees in agenda setting. (*British Statutory Conservation Agencies*)

- How 'success' of research is measured and by whom. (*Farm*)

- The role played by patents, intellectual property rights and how research organisations profit from their research. How whole crop plant genomes could be available to all researcher and plant breeders. (*Farm, Five Year Freeze*)

- How the public good can be accurately identified. (*Farm*)

- Assessment of how greater public involvement has occurred in other countries around the world e.g. farmer-centred systems in the Philippines. (*Five Year Freeze*)

- The consequences of EU regulatory policies on use of GM crops in developing countries. (*Nuffield Council on Bioethics)*

- Consideration of levy body and charity funded research. (RSPB)

- The role of University/Higher Education Funding Council-funded research and the influence of the Research Assessment Exercise and awarding of PhD studentships. (*Sir John Marsh*)

## Annex 1: List of respondents

| |
|---|
| **Agriculture Industry** |
| Applied Research Forum (ARF) |
| Farmers' Union of Wales (FUW) |
| National Farmers Union (NFU) |
| Soil Association (SA) |
| **Government** |
| Department for Environment, Food and Rural Affairs (Defra) |
| Department of Trade and Industry (DTI) Bioscience Unit |
| Office of Science and Technology (OST) Foresight Directorate |
| Scottish Executive Environment and Rural Affairs Department (SEERAD) |
| **Individual** |
| Colin Tudge |
| Dr David Heaf, IFGENE |
| Dr Les Levidow, Open University |
| Dr Sean Butler, St Edmund's College, Cambridge |
| Professor Jules Pretty, University of Essex |
| Sir John Marsh |
| **Non-Departmental Public Body** |
| British Statutory Conservation Agencies (BSCA)/ English Nature |
| Scottish Environmental Protection Agency (SEPA) |
| **Non-Governmental Organisation** |
| Compassion in World Farming (CIWF) |
| *Farm* |
| Five Year Freeze (FYF) |
| Food Ethics Council (FEC) |
| Greenpeace UK |
| Munlochy GM Vigil |
| Nuffield Council on Bioethics (NCB) |
| Royal Society for the Protection of Birds (RSPB) |
| **Research Council** |
| Biotechnology and Biological Sciences Research Council (BBSRC) |
| Natural Environment Research Council (NERC) |
| **Research Provider** |
| Institute of Food Research (IFR) |
| National Institute for Agricultural Botany (NIAB) |
| Rothamsted Research (RRes) |
| Scottish Agricultural College (SAC) |

## Annex 2: Classification of respondents

### A. Number of responses and response rate by category

| Classification | Number | Percentage of total | Number invited to respond | Response Rate |
|---|---|---|---|---|
| Agriculture Industry | 4 | 13% | 10 | 40% |
| Biotechnology / agri-business | 0 | 0% | 9 | 0% |
| Government | 4 | 13% | 38 | 11% |
| Individual / academic | 6 | 20% | 27 | 22% |
| Non-Departmental Public Body | 2 | 7% | 12 | 17% |
| Non-Governmental Organisation | 8 | 27% | 17 | 47% |
| Research Council / other funders | 2 | 7% | 6 | 33% |
| Research Provider | 4 | 13% | 29 | 14% |
| **Total** | **30** | **100%** | **148** | **20%** |

### B. Number of questions addressed by category

| Classification | Number of Questions Addressed | | | |
|---|---|---|---|---|
| | Comment on analysis paper only | General comments only | Fewer than half | Most or all |
| Agriculture Industry | 0 | 2 | 1 | 1 |
| Biotechnology / agri-business | 0 | 0 | 0 | 0 |
| Government | 0 | 3 | 0 | 1 |
| Individual / academic | 2 | 1 | 0 | 3 |
| Non-Departmental Public Body | 0 | 0 | 0 | 2 |
| Non-Governmental Organisation | 0 | 2 | 1 | 5 |
| Research Council / other funders | 0 | 1 | 1 | 0 |
| Research Provider | 0 | 1 | 0 | 3 |
| **Total** | **2** | **10** | **3** | **15** |

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