Corporate Dominance and Agricultural Biotechnology: Implications for Development

3

DEMOCRATISING BIOTECHNOLOGY

The development and commercialisation of agricultural biotechnology has profound implications for developing countries and poor farmers, whether or not they have access to it. Contrary to the enthusiastic claims of some of biotechnology's cheerleaders, these are likely to include adverse as well as beneficial consequences for those who depend on farming. But biotechnology's evolution will be driven largely by the decisions of company directors and research scientists in the private sector, who are preoccupied with corporate profitability and competitiveness, rather than the problems of poverty, food security and economic development in poor countries.

A genetically modified crop which requires less labour for its cultivation might benefit the land-owning poor, but would undermine the livelihoods of landless people who rely on income from agricultural labour. Similarly, genetic engineering may be used to develop novel crop varieties which could undermine developing countries' export markets. An example is the attempt by an American company to engineer a new variety of rice, based on a Thai variety, that will grow in Florida. In this fashion, the application of agricultural biotechnology can have positive and negative developmental impacts. However, these consequences are not intrinsic to biotechnology. The actual effects will be determined by the way the technology is applied in practice.

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Private sector dominance

The private sector is currently in a better position than the public sector to mobilise the major resources necessary to carry out sophisticated biotechnology research. Consequently, the decisions of private companies will largely determine what R&D takes place and which products are commercialised, even though most biotechnology research in developing countries involves the public sector. In this respect, private sector decision-makers probably have more influence over the developmental impact of agricultural biotechnology than their counterparts in the public sector, whether they be in government, agricultural research institutes or even the major multilateral, bilateral and philanthropic donor agencies.

Budgets in the public agricultural research sector are under great pressure. At the same time, public sector researchers' 'freedom to operate' is undermined by a battery of legal instruments (intellectual property rights, research contracts, material transfer agreements and so on), that impose extra transaction costs. For the private sector, these costs represent important investments to safeguard future income and preserve key commercial assets, but for the public sector they are a burden on their financial and technical resources, and inhibit their traditional strengths in working collaboratively to generate public goods (see box).

BUSINESS AND BIOTECHNOLOGY

Private companies' commercialisation strategies prioritise transgenic crops over other potential biotechnological applications. Genetic engineering is attractive to firms because the ability to register exclusive ownership over new varieties makes it more feasible for them to recoup the high costs of biotech R&D. In principle, GM crops have the potential to address key problems relevant to food security and poverty in developing countries. However, in practice the GM seeds commercialised to date by private companies are more expensive than conventional seeds, tend to be marketed along with a package of other inputs such as proprietary chemicals, and have complex management requirements that are often impracticable on small plots of land. Most seriously, they threaten to increase poor farmers' dependence because they restrict their rights to save and exchange seeds.

The crops and traits commercialised so far have been targeted at the needs of large-scale commercial farmers, particularly in North America. Even observers who are favourable towards biotechnology universally agree that the crops, traits and challenges of interest to poor farmers in developing countries are being neglected. Critics point out that the tendency of both private and public sectors to focus on GM distracts attention

from research into alternative technologies – including advanced non-transgenic biotechnologies – that are more likely to be appropriate to the capacity of both science institutes and farmers in developing countries.

The private sector and public 'developmental' goods

There is a shortfall in R&D directed at the production of 'public goods' for development. The public sector is poorly positioned to address this gap. For their part, the major biotechnology firms have embarked on a few projects designed to demonstrate the capacity of biotechnology to contribute to development.

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The private sector's willingness to engage with projects like vitamin-A rice, virus-resistant sweet-potato and the Insect-Resistant Maize for Africa (IRMA) project should perhaps be welcomed. But the rarity and small scale of such projects only serves to highlight the yawning gap between them and the array of crops and traits already commercialised for developed country markets.

Projects like vitamin-A rice and IRMA seem to happen against the odds, in the particular circumstances when public or philanthropic organisations can agree terms with the private sector. Although company executives are often willing in principle to engage with such initiatives, in practice they will only do so under very particular conditions, which include strict safeguards for their intellectual property rights. Ultimately, the decision to get involved hinges on a hard-headed business assessment about whether the philanthropic or public endeavour may undermine the company's commercial interests.

For example, Monsanto's willingness to share its rice data certainly helped public researchers to complete the sequencing of the rice genome more quickly. However, the agreement came with strict conditions on who could use the information, and how. Significantly, it happened when the company had decided to direct its R&D efforts away from rice to concentrate on four other crops.

Much more profound and far-reaching than any philanthropic project or public-private partnership, the impact of corporate strategies in the developing world will be felt through their core business activities. As things stand, the public sector is poorly-equipped to address the needs of poor farmers, and companies will continue to concentrate on high-value proprietary GM technologies, attuned to the needs of wealthy markets in developed countries. There is a risk that smallholders in developing countries will be left to apply spin-off technologies, in the hope that crops developed with the agronomic and economic conditions of developed countries in mind, will nevertheless perform acceptably well under their own conditions.

Corporate voluntarism can only achieve a small amount of good in terms of harnessing appropriate and socially desirable biotechnology for development. Therefore, an effective, coherent regime of public policy and regulation is urgently needed. This should include:

- public funding for R&D to address the need of developing country farmers for affordable, appropriate technologies.
- a regulatory framework to ensure that the core business activities of companies will contribute to development rather than undermine it. This may entail:
  - providing incentives for companies to develop products for which large markets do not exist;
  - re-examining the scope of IPRs to ensure that undesirable monopolies are not created and public-good research is not inhibited (see Briefing 4);
  - the effective enforcement of competition and anti-trust laws in order to tackle the negative consequences of concentration in the biotech and seed sectors; and
  - a careful evaluation of the potential for policy and regulatory frameworks to create incentives and institutionalise the best practices of corporate social responsibility and corporate citizenship, in order to harness the capacity of the private sector to deliver public as well as private goods more effectively and more often.

This briefing was written by Dominic Glover (IDS).
It is based on papers 17 and 38, and draws on papers 9 and 27 (see publications list). These are available at:
www.ids.ac.uk/biotech

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