

Biotechnology – helping to secure agricultural production in developing countries

A recent report by the House of Commons International Development Committee, *World Food Programme and Global Food Security*, noted that the soaring food prices have reinvigorated the debate about GM, that research into this area should take place “so that countries can make an informed decision on the basis of reliable information.” There is no quick fix when it comes to providing sufficient food and materials in developing countries, but a starting point can be protecting current food supplies whilst investing in methodologies to increase agricultural output. Biotechnology, including GM, can be part of the solution.

- The application of biotechnology to agriculture is already **making a difference today**: pest-resistant GM crops in China, South Africa and India are providing stable food supplies and farmers are reaping economic profit from increases yields and quality, and is thus complementary to **international development** and humanitarian objectives.
- Of the twelve million farmers who grow GM crops, eleven million are resource poor farmers living and working in developing countries.
- Research Institutes and biotechnology companies provide the technology to develop individual traits, but there are **real and significant economic benefits** for farmers, who are more productive, and consumers, who experience lower prices. According to a recent study “on average, two thirds of the global benefits are shared ‘downstream’, i.e. among domestic and foreign farmers and consumers”¹.

How is biotechnology already helping?

- **Insect-resistant maize**: where it is cultivated, farmers benefit financially from the increased yields of insect-resistant maize since the same price is charged for GM and non-GM maize. Preventing against insect infection can also enhance the quality and safety of maize for human consumption, by reducing the propensity of the crop to fungal infection, which can result in the accumulation of mycotoxins in the crop.
- **Insect-resistant cotton**: yield losses in cotton are estimated to be worth \$5bn annually, mainly through the damaging impact of the cotton boll weevil. The development of varieties intrinsically resistant to this weevil has transformed the productivity of the crop and the quality of the resultant cotton. Farmers in China, India, South America and South Africa have all benefited.

What’s in the pipeline?

- The International Rice Research Institute (IRRI) has recently commenced developmental field trials in 2008 on **vitamin A enriched ‘Golden Rice’**; 200g of this rice will give the recommended daily allowance of vitamin A, potentially saving thousands of lives blighted by vitamin A deficiency. Further funding from the Rockefeller Institute will allow this potentially life-saving innovation to reach the marketplace at a faster rate
- Public-private partnerships such as the CIMBAA project in India are effective means by which nutritionally important green crops such as cabbages **resistant to the Diamond Back Moth caterpillar**, can be developed where normal business models would not justify their development. This project should be on the market within five years.

¹ GM Crops in Europe: How Much Value and for Whom? U Leuven



- The absence of sufficient water at certain points of a plant's lifecycle is a major cause of yield losses, and the development of **drought-tolerant crops** could make a huge difference to farmers worldwide. The African Agricultural Technology Foundation (AATF), a public-private research partnership based in Nairobi, is developing, "water-efficient maize", a trait that will become increasingly important if, as appears to be the case, climate change is making rains more variable. This will be marketable in five to six years.
- There are also a number of projects in development optimising the **nitrogen use efficiency** of a crop, a vital requirement in many parts of the world where nitrogen fertilisers are in short supply
- Trials are being conducted of **GM cassava** which could add vital nutrients to this starchy root vegetable as well as remove toxins: a single GM portion could provide many of the nutrients needed in a day.

Who benefits?

- Genetically modified crops are already helping over 12 million farmers around the world by delivering more consistent yields of higher quality crops. The vast majority of these farmers are resource-poor growers with small plots of land whose lives can be significantly improved through GM technology.
- Terri Raney, Senior Economist of the Food and Agriculture Organisation of the United Nations suggests that the *"...economic evidence available to date does not support the widely held perception that transgenic crops benefit only large farms; on the contrary, the technology may be pro-poor. Nor does the available evidence support the fear that multinational biotechnology firms are capturing all of the economic value created by transgenic crops. On the contrary, the benefits are shared by consumers, technology suppliers and adopting farmers, although non-adopting farmers are penalized as their competitors achieve efficiency gains they are denied"*.

What are the obstacles?

- The stringency of **EU approval systems** could deter developing nations' farmers from adopting GM if they fear not being able to export to EU markets. Furthermore, the **capacity of many farmers** in developing nations is limited and they may be unable to meet the EU's 0.9% labelling law, which may lead many to believe that cultivating GM could impact on their ability to access the EU markets of conventional commodities.
- An **anti-science rhetoric** regarding biotechnology and GM is too often unchallenged. If we allow GM to be demonised many of the least well off may miss out on the opportunities it could offer.
- Insufficient **business models** and an unpreparedness to invest in the necessary infrastructure for biotechnological projects often hamper progress, and it is therefore important to try to establish public-private partnerships that can provide the framework and funding for agricultural development.

Abc seeks to allow all farmers in all parts of the world the same opportunities and hopes that the UK will take a lead in exploring the potential GM can offer to our international development priorities.

What can Government do?

- Progress research into the potential international socio and economic benefits of GM in conjunction and collaboration with the biotechnology industry
- Recognise the link between biotechnology's potential and the Government's positions on international development
- Consistently underline the importance of scientific debate and to stress that the anti-GM lobby need to be placed under the same scientific scrutiny as the biotechnology companies