

## **Notes of a meeting of the All-Party Parliamentary Group on Science & Technology in Agriculture, 6-7pm, Monday 20 June 2011**

### **GLOBAL GM CROP ADOPTION – STATUS, IMPACT & PROSPECTS**

**Guest Speaker:** Clive James, ISAAA (International Service for the Acquisition of Agri-Biotech Applications)

**Members present:** George Freeman MP (Chair), Duke of Montrose, Lord Taverne, Daniel Pearsall (Co-ordinator)

#### **Introduction**

In the chair, George Freeman thanked members for attending at such short notice and introduced Clive James as a noted international authority and commentator on the global uptake, performance and development of GM crops. On behalf of ISAAA, Clive James presented George Freeman with a replica of the Congressional Medal awarded to wheat breeding pioneer Norman Borlaug in recognition of his contribution, through agricultural science, to alleviating global hunger and poverty.

#### **Presentation**

*[Please note that a full copy of Clive James' slide presentation is available to download via the Meetings section of the All-Party Group web-site at [www.appg-agscience.org.uk](http://www.appg-agscience.org.uk) ]*

Clive James (CJ) introduced ISAAA as a US-registered not-for-profit charity, operating as a global information resource on crop biotechnology whose mission was to share knowledge to help alleviate poverty by increasing crop productivity and income generation.

CJ emphasised that no single approach would suffice to feed 9.2 billion people by 2050, but that biotech crops were essential part of the toolkit. Synergy was needed between traditional and emerging technologies.

Key points from Clive James' presentation are as follows:

#### **Global GM crop adoption 1996-2010**

In 2010 global GM crop plantings reached a cumulative 15 year total of 1 billion hectares: it took 10 years to reach the first 500m ha then just five years to reach the second 500m ha.

From a starting point of 1.7m ha in 1996, the global GM crop area expanded 87-fold to 148m ha in 2010, making it the fastest adopted technology in the history of modern crop production. The number of countries growing GM crops increased from 25 to 29 in 2010. In addition there are 30 countries importing GM crops but not planting them.

GM crops are not confined to industrialised agriculture – of the top 10 countries growing GM crops (each with over 1m ha of plantings), eight are developing countries. Of 15.4m farmers growing GM crops globally, 90% or 14.4m are small-scale, resource-poor farmers in developing countries (including 6.6m in India, 6.3m in China).

In the coming years it is predicted that the proportion of GM crops grown in developing countries – eg China, India, Brazil, Argentina, South Africa – will exceed the area grown by farmers in developed nations. In Africa, for example, the number of countries growing GM crops is expected to increase from three to 10 by 2015.

Originally focused almost exclusively in the hands of private sector corporations, CJ noted that the technology's development is now taking place through three main channels:

- Private sector
- Public / private partnerships – eg Embrapa/BASF in Brazil
- Public sector research – eg Chinese Academy of Sciences now investing \$1 - \$1.5bn per year in GM crop programmes

### **Impact of GM crop adoption**

CJ highlighted a range of significant benefits – social, economic and environmental – arising from the first 15 years of commercial GM crop cultivation as follows:

Improved farm productivity and income – farm income gains of \$65bn from 1996 to 2009, of which 44% was due to cost reduction and 56% due to production gains of 229m tonnes.

Protection of biodiversity – improved crop productivity on the same area prevents loss of uncultivated forests and habitat, currently estimated at 13m ha loss/year in developing countries. Without biotech production gains of 229m tonnes an additional 75m ha would have been required – a land saving technology

Environmental impact - reduced need for external inputs, eg pesticide savings of 393m kg from 1996/2009, a 9% reduction. Conservation of soil and water through increased adoption of no and low tillage farming systems.

Climate change – reduced inputs and cultivations from growing biotech crops saved 18bn kg in CO<sub>2</sub> emissions in 2009 – equivalent to taking 8.3m cars off the road for a year

Social benefits - contribution to poverty alleviation among 14.4m small-scale, resource-poor farmers in 2010, welfare benefits emerging in terms of improved education and healthcare provision.

### **The Future – 2011-2015**

CJ forecast key biotech developments coming through over the five year period to 2015, the Millennium Development Goals Year, as follows:

By 2015, the global area of GM crops would increase by a third to around 200m ha, grown by 20m farmers in 40 different countries.

Importantly, the next five years would see the emergence of new biotech crop and trait combinations, including:

Drought tolerant maize - likely to be commercially available in the US and Canada by 2012/13. The same technology would also be made available in Africa through collaboration between the Gates Foundation and BASF/Monsanto – expected to be available for cultivation there by 2017.

GM rice – Golden rice (Vitamin A enriched) was expected to be commercialised in the Philippines by 2013, while China could be growing Bt (insect resistant) GM rice by 2014/15 following the biosafety approval granted by the Chinese authorities in November 2009. Rice was a hugely significant crop, a staple food for half the world's population and grown by 250m people in Asia.

CJ noted that China had also granted biosafety clearance to low phytase GM maize in November 2009, offering potential production and environmental benefits to China's rapidly expanding intensive livestock sector (nb 5m pigs in 1968 up to 500m pigs today; 12m poultry in 1968 up to 12 bn today).

Quality traits – eg health-promoting Omega-3 enriched soybeans expected to be commercialised in the next two to three years.

Overall CJ concluded that the rate of global biotech crop development and adoption was continuing to accelerate, and while 1996-2005 had clearly been dominated by the Americas, he predicted that Asia would emerge over the next 5-10 years as a major player.

GF asked whether Europe was being left too far behind given the pace at which the global biotech market was developing, and whether the UK had a bigger role to play in fostering the technology's development and acceptance.

CJ considered that it was not too late, but the UK and Europe needed a biotech product which would drive the political will and consumer acceptance behind the technology. In his view the GM blight tolerant potato provided such a prospect as the fourth most important food crop in the world, susceptible to heavy diseases losses and currently dependent on intensive fungicide programmes to control blight at a cost of \$5bn globally per year.