

Shifting Trends and Fortunes in Crop Plant Genomics in Europe since the 1980s.

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Since plant science, or botany as we used to call it, first met up with molecular biology in the 1970s we have observed spectacular progress in not only in our knowledge of the way in which plant genomes are structured and how they function, but also in the way in which this knowledge can be applied to crop science and crop improvement.

However, practical progress has by no means been uniformly swift and the conventional linear thinking concerning pathways of innovation which characterised early investment and commercialisation of the emergent technologies has been severely tested. Challenges have come not only from the well publicised mobilisation of public opinion against GM crops, but also from the burdens imposed by installation, surveillance and compliance with national and international regulation, and also the perceived narrow negotiation of agronomic goals seen to stem from commercial needs for competitiveness and payback on investment. Further challenges came from an emergent appreciation of the narrow ownership basic genomic knowledge and of rights to practice new technologies which serve to promote potential monopolies and polarise the rich/poor divide. This can be coupled to an appreciation within the commercial sector itself that the scale of upfront investment required to establish technologies such as marker-assisted selection (MAS) across a range of crops requires cooperation and pooling of knowledge.

The apparent stuttering and stalling of the innovation process has served also to highlight the disconnection between basic exploratory plant science, crop science and agronomy in Europe. Latterly though there has been a growing recognition of the need to close the loop of the innovation cycle by opening up debate and consultation on the *needs* of Europeans in relation to agricultural and silvacultural productivity, relating this to new priorities for crop and plant science within a context of public/private cooperation. A particular example of this which I will discuss is the recent European “Plants for the Future” initiative.

I shall weave an illustrated path through the successive interplays of discovery, technological achievement, intellectual property, regulation, research policy, economic imperatives and social and institutional reaction, highlighting the points of inflection which mark the shifting trends in genomic science production and application. A

published briefing for the latter part of my presentation can be found at : Plant Biotechnology Journal (2006) 4, 3-5

Biographical note:

During the period in question Steve Hughes was employed as Manager of the International Agribusiness Applications Unit at Unilever Research UK before becoming Head of Biotechnology for the SME Group of Companies in Italy and then Head of Biotechnology at Plant Breeding International (Cambridge). He also served on the (UK) Advisory Committee on Genetic Modification; the (European) Green Industry Biotechnology Platform, the British Society of Plant Breeders Biotechnology working Group, and the (UK) Nuffield Council on Bioethics working party on Ethical and Social Implications of GM Crops. Latterly he returned to Academia and is now Co-director of the ESRC Centre for Genomics in Society at Exeter University.

