



## Are the European Union Regulators Laggards?

It is appropriate, first, to review the discussions and outcome of a meeting of the FAO in Rome, 15-17 February this year.

The meeting was entitled “The Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition”. The key question at the meeting was: to what extent could agricultural biotechnologies assist and benefit smallholders in developing sustainable food systems and improve nutrition during climate change

Our review, by Prof. Denis Murphy, who chaired one of the sessions, concentrates on the enormous and rapid advances which are being made in the technology of plant and animal breeding.

Murphy (in this Issue) describes the advances in methodology. These developments make the distinction difficult to detect between genetic manipulation, by so-called GM techniques and those by conventional techniques, or even with those hybrids which occur naturally.

In some cases the distinction does not exist. As a consequence the EU regulations for the approval of new cultivars are outmoded, particularly as many countries have already approved and used techniques, developed in the EU, for which the

Regulators in the EU have not yet given their approval.

Murphy concludes with the statement that the use of genome editing and genomics technologies has the scope to vastly increase crop yield, quality and biodiversity. These new genetic technologies may eventually make much of the current 'conventional' GM-based crop improvement and its risk assessment & regulation obsolete and there are already calls that organisms altered by gene editing should not be characterised as GMOs.

Gene editing can considerably widen the range of traits, especially smallholder-relevant traits, in hitherto disregarded crops and these will be altered much more rapidly and cheaply than was previously possible.

There is an urgent need to accelerate capacity building in all forms of agbiotech and related public outreach in all countries.

This provides a great opportunity for the emergence of a new generation of innovative public-private partnerships and

new agbiotech methods aimed specifically at improving smallholder agriculture, as we face up to increasing food security challenges across the world.

Murphy further argues there is a case for the FAO to coordinate an investigation into the feasibility of developing open-source biotechnologies (especially genome editing) to be used for public-good applications in developing countries.

Urgency, is of the essence, as climatic adaptation of crops is essential if yields of healthy crops are not only to be sustained, but increased.

The world's cultivatable areas are not increasing (total <math>14 \times 10^6 \text{ km}^2</math>), whilst the climate is changing and the population to be fed is increasing. In the case of a number of countries, e.g. Brazil, the area is being maintained, or increased, at the expense of natural forest.

The proportion of cultivatable land in India exceeds 40% of the total land area (*Fig. 1*), a country whose population is increasing rapidly and where climate change is likely to have one of the largest impacts.

Murphy's paper will be followed, in due course and most appropriately, by two papers from India by Professor Toky and co-workers covering details of innovative agroforestry for livelihood and environmental security, especially for small-holders.

These papers provide details of tree species they recommend for use under a variety of Indian environments.

Shortly after this we shall publish a paper by Tang Huaizhi *et al.* on how China is using current technology in farmland development and a second by Wang Jing and co-workers, giving evidence of how the Chinese are enhancing the fertility and increasing the crop yields of a large area of arid saline-alkali land in the Ningxia Hui Region.

Finally this spring we shall publish another Indian paper in which Professor Aggarwal and Dr Chhetri, outline the development of smart villages in South Asia.

Each of these contributions will be accompanied by editorial comments.

## References

1. "The CIA World Factbook". Central Intelligence Agency. Retrieved June 2006. Percentage shares of total land area [by country] used for arable land – land cultivated for crops like wheat, maize, and rice that are replanted after each harvest.

*David Frape*

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 [Dr David Frape](#)

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## Comments