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SUSTAINABLE AGRICULTURAL DEVELOPMENT: THE ROLE OF INTERNATIONAL COOPERATION

PROCEEDINGS
OF THE
TWENTY-FIRST
INTERNATIONAL CONFERENCE
OF AGRICULTURAL ECONOMISTS

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Section Summary

Major developments in agricultural research, and the protection of intellectual property rights in its results, have important implications at the national and international levels. Within our general conference theme it can be said that it was the role of international cooperation which was of major concern in the whole section. The sessions also provided an opportunity for us to learn more about the underlying scientific techniques in biotechnology, a feature which spills over to some extent into Section VII.

The lead-off paper on this topic, by James Peacock, described the biological concepts and techniques of biotechnology and commented on the potential for application in agricultural production. It cited several examples of current developments in genetic engineering in the plant sciences which are likely to lead to practical applications in the field within three to four years. The speaker was optimistic about a rapid rate of technical progress in this field. He emphasized the 'user-friendly' nature of this technology as it comes to the farmer in the form of improved seed, an input with which he is familiar. Bio-engineering also makes possible the expansion of the range of uses to which plant materials can be put. For example, plants may find greater uses in the pharmaceutical industry because of these developments in the future.

Subsequent discussion by the formal programme participants in the plenary session (Rao, Van der Meer and Barker were asked to make extensive comments from their different perspectives) as well as from the floor, reinforced many of the points made by the main speaker, but also pointed to some potential problems in the development and application of this new technology. On the positive side, and especially from the viewpoint of the developing countries, the possibilities were seen for improved food security, cheaper food through lower production costs, greater stability in crop yields and farm incomes, and the possibility of natural resource conservation by reducing use of chemical inputs and withdrawing highly erodible lands from production. The very specific ways in which these techniques can be used to affect plant characteristics were also seen as a way to make plant science research more immediately responsive to a socially determined research agenda.

Several speakers were concerned about public reaction to the real or perceived risks associated with the new technology and about consumer acceptance of products resulting from it. The need was pointed out to have regula-

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tory mechanisms developed by a well-informed public. These educational and regulatory processes may lag behind the potential technical developments taking place in this field.

Invited paper sessions covered plant breeders' rights (Pray), problems of international spillovers (Schweikhardt and Bonnen), the international research centres (Collinson and Wright Platais) and the role of private and public sectors in development and diffusion of research (Lindner). During the discussions emphasis was given to the economic and institutional environment in which research resources are allocated to biotechnology. During the current era of flat price trends for agricultural products and high priorities for using public research funds for other purposes, public interest is low in research that expands agricultural output. This was seen as an important brake on bio-engineering research in general. Specifically, this was suggested as the explanation for the apparently very cautious movement into this research area by the international agricultural research centres. Some thought that this situation might improve as bio-engineering research becomes less expensive as the start-up costs are behind us, and as this research replaces some of the former field work and becomes a standard part of laboratory procedures and academic curricula in biology.

The appropriate mix of public and private sectors in financial support and conduct of bio-technology research was also given considerable attention. On the one hand, there are circumstances under which the nature of this research allows the developer of the technology to capture a larger share of the benefits derived from it. This provides powerful incentives for the private sector to conduct the work. On the other hand, there are also possibilities for large spillovers of benefits, for example, when consumers in general enjoy lower prices of the genetically engineered products or when there is scope to duplicate application of the research results by other producers than those for whom the research was conducted. Broad gains in new knowledge which have public goods characteristics may also result from the research. These spillovers and public goods would argue for public conduct of the research.

There was agreement that one should expect society to do a considerable amount of experimentation with the design of institutions as it struggles with the economic and ethical issues associated with biotechnology research. In this process it may be possible to draw lessons from past experience with protecting the rights of plant breeders. It may also be necessary to develop entirely new modes of cooperation among the various participants in the private sector, the international agricultural research centres, educational institutions and public agencies that support and conduct research at national and sub-national levels. Agricultural economists will have many opportunities to contribute their analytical insights as these new institutions evolve.

Chairpersons: W.F.Musgrave, Michelle Veeman, Alex Dubgaard.

Rapporteurs: Per Halvo Vale, Toshio Kuroyanagi, Hans Jansen.

Floor discussion: D.Belshaw, M.Lopez-Pereira, R.Dumsday, J.Strasma, K.J.Thomson, T.Horbulk, J.Peacock.