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SUSTAINABLE AGRICULTURAL DEVELOPMENT: THE ROLE OF INTERNATIONAL COOPERATION

PROCEEDINGS
OF THE
TWENTY-FIRST
INTERNATIONAL CONFERENCE
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Section Summary

In the previous section of the conference programme attention focused on the resilience of the small farm sector. The final section was devoted to a number of closely related questions. It began with another discussion of biotechnology within the specific context of the small farm sector, where poverty may be one of the key underlying features. From that beginning the section looked closely at the characteristic features of the sector in a number of Asian countries, and in more detail at mainland China. Discussion then turned to the key issue of credit.

The potential of modern biotechnology for improving the well-being of the small farmer and promoting sustainable agricultural development through use of varieties resistant to pests and diseases and to abiotic stresses was discussed in the papers by Iftikar Ahmed and Robert Herdt. A key point which emerged was that there are encouraging prospects of reducing farmers' dependence on agro-chemicals and raising yields in unfavourable production environments which have been by-passed by the green revolution technology. To many at the Conference that was a central issue. The green revolution has frequently been criticized for a lack of specific focus on the 'poor', and the question now is whether another 'biological revolution' will not only be production enhancing but also be directed towards more specific equity goals. Dr Ahmed's paper contains a vast amount of detailed evidence relating to the nature of biotechnological developments, drawn from numerous specific situations. In some of those, newer technology could be 'small farmer-friendly', though he was able to quote disturbing evidence of its potential to replace labour and to remove markets through technical substitution. He was criticized for not having 'answered' the question posed in his title, and for not having paid sufficient attention to the institutional arrangements needed to direct research and subsequently assist poor farmers in their efforts to obtain knowledge of, and apply, new techniques. Nevertheless, what he did amply demonstrate was the sheer complexity of the task of understanding the many interrelationships which emerge between technical developments and their detailed economic effects.

A similar theme was heard from Robert Herdt. Within his paper there was a mass of information relating to the scientific nature of biotechnology, though, before considering what might be done, Dr Herdt laid great stress on what he called the 'four realities' about the new developments. Furthermore, writing

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from his position within an organization which has fostered so much research, he was able to speak with authority about both the need to set priorities and the difficulty of doing so.

The papers stimulated a lively discussion concerning role of both governments and non-government organizations in less developed countries in more fully exploiting the potential created by biotechnology research than appears to have been the case with green revolution technology.

Against that background it was particularly interesting to read the first invited paper by Keijiro Otsuka, which dealt specifically with green revolution effects in regions studied in an International Rice Research Institute project, supported by the Rockefeller Foundation. The paper was concerned with the income distribution effects of adoption of the first wave of new technology across rural households and agro-ecological regions, by assessing the impact of diffusion on the operation of land and labour markets. It was suggested that the poor have gained not only from lower foodgrain prices due to increases in supply, but also through the operation of labour and tenancy markets. Labour income tends to be equalized across production environments owing to rural-rural migration, and employment for the low-income group increases as the result of substitution of family labour for leisure in relatively high-income households. Significant regional differences in land income have, however, emerged following differential adoption of improved varieties across agro-ecological zones.

Though they provoked a sharp reaction from the discussion opener the findings suggest that the major problems of poverty alleviation are not to be found in the nature of technology *per se*, but in the promotion of 'human capital formation' and in reform of agrarian structures. The reception of the paper from the floor suggested that the full results of the study will provoke a major re-opening of debate.

The accompanying invited paper by Niu Ruofeng and Chen Jiyuan provided the opportunity for a detailed examination of the small farm sector in mainland China in relation both to farm production and to rural non-farm activities. The importance of the latter increased substantially after 1979, when farmers were given relatively more freedom in the management of family resources. It appears that, when the gap in labour productivity between rural and urban areas increases with rapid development of urban manufacturing and services, the small farmer responds not only by introducing labour-saving technology in farming, but also through rapid capital formation and allocation of labour in non-farm enterprises.

The final invited paper session was devoted to the key issue of credit. One of the critical needs of the small farmer in sharing the benefits from technological process is access to agricultural credit. But the experience of the less developed countries shows that public sector institutions have had limited success in reaching the small farmer with credit and in recovering the loans for sustaining credit operations. The small farmer still depends largely on high-cost informal markets for loans. Richard Meyer and Geetha Nagarajan, presenting a paper at short notice, provided some innovative theoretical thinking concerning mechanisms to incorporate informal credit markets into the development process in a more satisfactory way.

In more applied work, the diversity of credit transactions in informal markets was described in K.A.S. Murshid's case study in Bangladesh, which indicated how informal credit transactions change with economic progress. The session was one of the few occasions at the Conference in which credit was explicitly discussed. It provoked a lively floor debate on the relationships between the formal and informal systems, on ways of improving both, and on the contributions which improvement could make in the development process. It was also suggested that there is a need for better understanding of household decision making with respect to the willingness to borrow and the choice of credit source. In short, the type of household analysis so much in evidence in the papers of Section VI, as well as that dealing with inter-linked markets, could have particular relevance to the future discussion of a central issue for agricultural economists.

Chairpersons: Mahabub Hossain, Sjarisuddin Baharsjha, Glenn Johnson.

Rapporteurs: Chaur Syan Lee, J.C. Umeh, Peter Calkins.

Floor discussion: G.T. Jones, D. Belshaw, J.C. Umeh, T. Engelhardt, R. Kada, J. Strasma, P. Dixit, P.B. Hazell, J. Groenewald, J.M. Boussard, M. Petit.