



Current status and options for crop biotechnologies in developing countries

Doc. ABDC-10/3.1



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A. Stocktaking: lessons from the past



Crop biotechnologies in developing countries



- **Creation of new genetic variation**
 - ploidy manipulation
 - mutagenesis and TILLING
 - somaclonal variation
 - interspecific hybridization
 - genetic modification
- **Screening and selection**
 - Marker assisted selection



Crop biotechnologies in developing countries (2)



- **Production and management systems**
 - micropropagation
 - plant disease diagnostics
 - bioprotection
 - biofertilizers
- **Conservation and management of genetic resources**
 - tissue culture-based techniques
 - use of molecular techniques for characterization and management



Analysis of past experiences



- 1. Uptake of biotechnologies in DC improving but patchy**
 - a. capacities often missing**
- 2. Most advances by private sector in developed countries and limited spillover to DC**
 - a. problems of access (IPRs)**
 - b. technologies non appropriate to face problems of smallholders**
- 3. Scarce documentation of development, adoption and impact**



Lessons learned



- **Best impact when:**
 - a. **indigenous research programmes in place**
 - b. **stakeholders involved in policy development and priority setting**
 - c. **strong development of public sector**
 - d. **good integration with crop breeding and management programmes**
 - e. **efficient and participatory extension systems**
 - f. **efficient regulatory systems**



B. Looking forward: preparing for the future



Key unsolved problems where biotechnologies can help



- **Biotic stresses**
- **Abiotic stresses**
- **Enhancement of yields**
- **Improvement of nutritional quality**
- **Narrow genetic basis of crop production**
- **Ensuring sustainable/environmental-friendly crop production**



Options for developing countries



- **Policy development**
 - strengthen capacities to make sovereign decisions
 - involve stakeholders in priority setting
 - consider socio-economic impact
 - communicate with society
- **Build up indigenous research programmes**
 - adequate and sustained investments
 - not at the expenses of R&D in other sectors
 - well linked to crop breeding and management programmes
 - Development of institutional and human capacities



Options for developing countries (2)



- **Development of regulation frameworks**
 - Integration with plant and animal health and food safety
 - Transparency and public participation
 - Regional collaboration
- **Linkages to strategies to/for? dissemination**
 - strong, pluralistic extension services
 - seed production and distribution systems
- **Shared access to technologies**
 - Focus on common goods
 - Public-Private Partnerships where appropriate
 - South-South Collaboration
- **Document development, adoption and impact**



Priorities for action by the international community



- **Assist in capacity development**
 - policy development
 - institutional set-up
 - national regulatory frameworks
 - human capacities
 - inclusion of stakeholders in decision making
- **Offer assistance to public sector R&D in biotech**
 - not at the detriment of other R&D sectors
 - support intimate links with crop breeding and management programmes



Priorities for action by the international community (2)



- **Offer a meeting place for countries**
 - international treaties, conventions
 - regional harmonization
- **Facilitation of access to technologies**
 - promotion of South-South and North-South collaboration and Public-Private Partnerships