

Coping with water scarcity: What role for biotechnologies?



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Preface

22 March is World Water Day. Its international observance is an initiative that grew out of the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. Coordinated by the Food and Agriculture Organization of the United Nations (FAO), on behalf of the 24 Agencies and Programme Members of UN-Water, the theme of World Water Day for 2007 was “Coping with water scarcity”. The day provided an opportunity to reflect on the challenges posed by the unsustainable increase in water use and its degradation across the world and it also served as a spur to action to reverse current trends and work towards a more efficient and more equitable distribution of water for all.

Water scarcity affects all social and economic sectors and threatens the sustainability of the natural resources base. Addressing water scarcity requires an intersectoral and multidisciplinary approach to managing water resources in order to maximize economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems. Integration across sectors is needed. This integration needs to take into account development, supply, use and demand, and to place the emphasis on people, their livelihood and the ecosystems that sustain them. On the demand side, enhancing water productivity (the volume of production per unit of water) in all sectors is paramount to successful programmes of water scarcity alleviation. Furthermore, protecting and restoring the ecosystems that naturally capture, filter, store and release water, such as rivers, wetlands, forests and soils, is crucial to increasing the availability of good quality water.

About 150 events were organized throughout the world to mark World Water Day 2007 (www.unwater.org/wwd07/nfevents.html). These included a special World Water Day celebration ceremony held at FAO Headquarters in Rome, where the opening address was given by the FAO Director-General Jacques Diouf who called coping with water scarcity the “challenge of the 21st century” (www.fao.org/newsroom/en/news/2007/1000520/index.html). Among other FAO initiatives, a moderated e-mail conference was also held on “Coping with water scarcity in developing countries: What role for agricultural biotechnologies?”, organized by the FAO Working Group on Biotechnology and the FAO Water Development and Management Unit. The conference took place over a four-week period that was timed to overlap with World Water Day. The background paper and summary report from that conference form the basis of this current publication.

Biotechnology is a broad collection of tools and these tools are currently being applied for a wide range of different purposes in agriculture (e.g. genetic improvement of plant varieties and animal populations or characterization and conservation of genetic resources). FAO considers that biotechnology provides powerful tools for the sustainable development of agriculture, fisheries and forestry, as well as the food industry and that when appropriately integrated with other technologies for the production of food, agricultural products and services, it can be of significant assistance in meeting the needs of an expanding and increasingly urbanized population (www.fao.org/biotech/stat.asp).

A number of key messages emerged from the conference and two of them may be underlined here. The first is that there was a general consensus among those that participated that biotechnology has a valuable role to play in addressing the challenge of water scarcity in developing countries, although opinions differed on the relevance

of different biotechnology tools. Over the past years, opinions have indeed differed widely regarding one particular biotechnology, genetic modification, and the resulting genetically modified organisms (GMOs) that it produces. The controversy has been exacerbated by large-scale dissemination of misinformation, both for and against GMOs, through the media and elsewhere. In this polarized situation, FAO has strived to provide high-quality, unbiased, science-based, updated information about agricultural biotechnologies to its Member Nations and their institutions and will continue to do so in the future.

The second is that, despite their promise, many applications of biotechnology relevant to water scarcity have not yet met their full potential to deliver practical solutions to the end-users in developing countries. This second point is a reminder that biotechnology is not a silver bullet and that the pathway from a research development in the laboratory to an improved plant growing in the farmer's field can be quite long. To ensure that research initiatives to develop drought resistant crops are successful and that the resulting products actually reach the farmers, participants in the conference called for increased collaboration between researchers in different disciplines and for all relevant stakeholders to be involved in the design of solutions to the problems of water scarcity in agriculture. This is something we strongly support. In addition, there is also a need for greater political and financial support to overcome other obstacles such as the lack of sufficient research funding, human and institutional capacities and adequate infrastructure. The capacities of developing countries can be strengthened through greater collaboration between research institutions in different developing countries and also between industrialized and developing countries. In this, FAO and its partners stand ready to coordinate the collaborative efforts and to support these capacity-building activities.

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