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Challenges for Agricultural Research”

Coping with Climate Change and the Role of Agrobiodiversity

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Abstract

The world's biological diversity is eroding. This concerns in particular the entire agricultural diversity of genes, species and their agrarian ecosystems, thus the resource base for food. With species becoming extinct, mankind is jeopardised. In this process, the effects of climate change become increasingly important. The most relevant climate change-related factors to agriculture are: the rise in temperature, reduced water supply and increased UV radiation. Severe implications are expected for agriculture and food supply notably in subtropical regions. As a consequence, a two-pronged strategy is required: mitigation of and adaptation to climate change. Agrobiodiversity plays a key role in this, which calls for a revision of the present conservation approaches. Instead of ex-situ conservation in gene banks a broader concept has to be envisaged by which emphasis is on in-situ conservation complemented by gene banks. The reason is twofold: **(1)** as future needs are unknown, a maximum of genetic resources has to be conserved at the lowest possible public cost. On-farm conservation is not necessarily less costly, but the costs are mainly borne by farmers and it produces private and public benefits **(2)** adaptation of genetic resources to environmental change is a necessary process that requires exposure to the environment, rather than deep-freeze storage in a gene bank.

So far, there is little awareness among professionals of the close relationship between climate change and food security and the role agrobiodiversity has to play. It is imperative to manage agrobiodiversity in a sustainable way. Climate change-induced environmental stress may in fact go beyond the reach of adaptation. But the in-situ approach offers a great chance to shape a future worth living.

Keywords: Conservation strategies, in-situ conservation, stress adaptation