

Use it or lose it – Agrobiodiversity conservation in China

China is extremely rich in agricultural biological diversity, as many crop plants and domesticated animal breeds now found around the world originated from China. However, many of the traditional varieties and breeds have been pushed out of cultivation by modern high-yielding varieties, resulting in an alarming reduction in China's agrobiodiversity resources.

For centuries, farmers in China have carefully selected and nurtured countless animal breeds and plant varieties according to local environments and their needs. Now, economic growth, agricultural production and conservation of natural resources have become competing objectives. Thus integrated approaches to balancing these objectives are needed. While the government of the People's Republic of China has to address short term food security issues, it must also conserve its agricultural genetic resources in order to ensure long-term national and global food security. More than ever before, in the 21st century, the genetic diversity of plants and animals has a crucial role to play in our adaptation to the consequences of climate change, desertification, other environmental changes and new market demands. If important genetic resources are lost, they will no longer be available as building blocks

for breeding plants and animals better adapted to a changing climate and newly emerging pests and diseases. Thus the conservation of agrobiodiversity – world-wide and in the P.R. China – is key to providing insurance against future threats.

■ The Sino-German agrobiodiversity project

The Chinese government is aware of the importance of agrobiodiversity. In order to adhere to its international responsibilities in this respect, the P.R. China has initiated a range of related national efforts and is successfully implementing the provisions of international agreements regarding biodiversity, such as the Convention on Biological Diversity. Evidence of its commitment lies in the fact that it is now home to the second largest gene bank

in the world. Still, it is equally important to conserve agricultural plants in their natural environment (Latin: *in situ*) so that they themselves can continue to adjust to changing environmental conditions through evolutionary processes. In China, there has been insufficient experience in participatory *in situ* conservation, which actively involves local people in the protection of agrobiodiversity by improving their understanding of, participation in and, most importantly, benefits from conservation. Thus, the Ministry of Agriculture of the People's Republic of China (MoA) and the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), jointly tested innovative approaches under the framework of a joint project from 2005 to 2011, and then made the project's results publicly available for replication.

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What is agrobiodiversity?

Agrobiodiversity comprises the variety and variability of animals, plants and micro-organisms that are used directly or indirectly for food and agriculture, including crops, livestock, forestry and fisheries. It comprises the diversity of genetic resources used for food, fodder, fibre, fuel and pharmaceuticals. It also includes the diversity of non-harvested species that support production (soil micro-organisms, predators, pollinators), and those in the wider environment that support agro-ecosystems (agricultural, pastoral, forest and aquatic) as well as the diversity of the agro-ecosystems themselves.
(Source: FAO)

“In the past the more we exploited the mountains, the less we benefited. Now we protect the mountains, but also benefit considerably from them.”

Mr. Huang Hanlin from Nangeng Village, Hainan Province, talking about the high returns from Yizhi (black cardamom [*Fructus alpiniae oxyphyllae*], a traditional Chinese medicine promoted by the project as a component of agroforestry systems).

■ Approach

In mountainous areas of different agro-ecological zones (tropical, subtropical, subtropical/temperate) in the provinces of Hainan, Hunan, Anhui, Hubei and Chongqing, the project tackled agrobiodiversity management through a multi-level approach ranging from village interventions and capacity building to providing policy advice and mainstreaming agrobiodiversity at the county, province and national level (see Figure).

In 26 pilot villages, the status of agrobiodiversity, including related traditional knowledge, was assessed. Subsequent village-level activities for *in situ* conservation of agrobiodiversity were planned in a participatory way, with activities such as small habitat protection, training on biodiversity-friendly farming techniques in newly established farmer field schools, improved seed maintenance, seed fairs, and developing a village-level code of conduct for agrobiodiversity management. In addition, small infrastructure measures were planned as incentives or compensation, mainly funded by the Chinese government, such as the establishment of biogas converters, small rural roads and drinking water systems.

In order to provide economic returns on agrobiodiversity conservation, agrobiodiversity crops with economic potential were identified, their value chains

Mr Chen Guangbo proudly presents the unique red rice produced in Shimen Village, Hunan Province. This forgotten traditional rice variety now provides additional income to Shimen farmers. Before the start of the project, farmers had not been aware about agrobiodiversity – why it should be protected and how to make money from it.

analysed and areas for improvement highlighted. For example, steps such as promoting the further processing of crops, reducing the intermediaries from farmer to market and performing customer analysis contributed to creating a marketing strategy for agrobiodiversity products focused on their quality, nutritional value and unique origins or associated cultural backgrounds. Farmers’ production and marketing skills were strengthened and cooperatives for agrobiodiversity products established. Participation in food exhibitions where farmers showed their agrobiodiversity products was also facilitated.

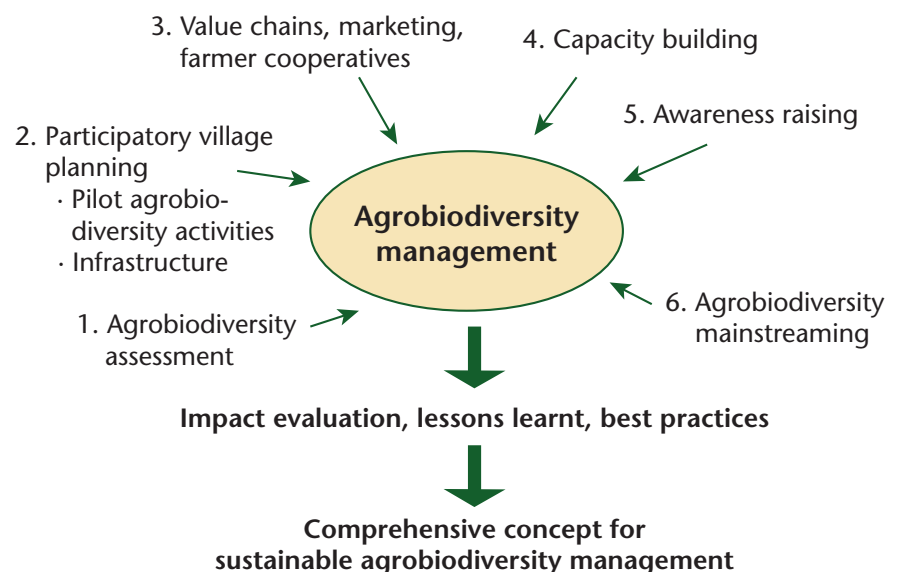
Capacity building, at farmers’ level through the farmer field schools as well as at the institutional level, was key to project success. Study tours to



Photo: J. Breholz

local, regional and international places significant to conservation proved an efficient means for transferring knowledge. Numerous project activities then served to raise awareness of agrobiodiversity. The project’s documentary film was broadcasted in five provinces by

A multi-level approach to agrobiodiversity management



Applying a wide variety of project interventions for different target groups and analysing the impacts achieved, lessons learnt and best practices provided the basis for formulating a comprehensive concept for sustainable agrobiodiversity management.

local television channels. Its travelling exhibition, which was shown 18 times within China and once in Germany, always attracted many viewers. Various project publications aiming at different audiences – farmers, trainers, students, scientists, government decision makers and others involved in agrobiodiversity conservation – also raised awareness and made agrobiodiversity knowledge more readily available and easily accessible. Project results were incorporated into government policies and plans, the establishment of new institutions was facilitated and agrobiodiversity courses were introduced at universities.

■ Economic returns have to be visible

Out of the many experiences gained through project implementation, six “best practices” were identified as valuable and worth sharing with others: (1) awareness raising for sustainable agrobiodiversity management, (2) integrated surveys on agrobiodiversity, (3) *in situ* conservation, (4) farmer field schools, (5) adding value to ‘agrobiodiversity products’ and (6) mainstreaming agrobiodiversity. The best practices publication (see end of article) outlines these six practices and provides recommendations for future actions to be taken by decision makers, development agencies and practitioners, farmers and other stakeholders in China as well as on a global level.

Why agrobiodiversity is important – the case of Ireland

During the 1840’s, the majority of the people in Ireland had lived mainly on subsistence farming. The potato was the country’s most important staple food. Only two varieties were under cultivation. A potato disease, caused by a fungus (*Phytophthora infestans*), broke out. As both varieties of potato were susceptible to this disease, it was able to spread unhindered, wiping out large parts of the crop for six years. Over a million people died, 12 percent of the entire population, and a further two million left Ireland and migrated to America. If there had been more diversity in potatoes, this disaster might not have happened with such drastic impacts.

Embodied in the slogan, “use it or lose it”, *in situ* schemes address the fact that the conservation of genetic resources is inherently linked to their use. The project found that one central factor determining the motivation of smallholders to support the conservation of plant species and animal breeds was the need for demonstrated economic returns. Farmers had to be motivated to actively use agrobiodiversity for reasons beyond pure environmental protection, e.g. higher incomes by means of better marketing of local ‘agrobiodiversity products’. Based on the lessons learnt and best practices, the project produced a concept note with policy advice for sustainable agrobiodiversity management. This will be used by the Ministry of Agriculture for planning agrobiodiversity activities.

■ Conclusions

Essential in agrobiodiversity management and therefore deserving special attention are the active involve-

ment of the rural population in *in situ* conservation, the vital role of women in the conservation process, and adding economic value to products derived from agricultural genetic resources (“use it or lose it”). Future efforts should focus on these in order to effectively tackle the tasks of conserving and sustainably utilising agrobiodiversity.

The project’s best practices are vital tools for unlocking the value of agrobiodiversity in agro-ecosystems, both within and beyond China’s borders. Scaling up this project’s outcomes and best practices at the county, province and national level will support the P.R. China in leveraging its role as an important actor in improving the global state of agrobiodiversity. Successful and sustained efforts within China and abroad will contribute substantially to the conservation and sustainable management of agrobiodiversity in China and world-wide.

This article reflects the author’s personal opinion.



Photo: giz

Farmers involved in the project exhibited their traditional crop varieties at the Shanghai BioFach, attracting many visitors’ interest and establishing links to national-level markets.

For further reading:

Seib, Nina (Ed., 2011): Best Practices – Sino-German Project on Sustainable Management of Agrobiodiversity. GIZ, Beijing. The publication can be downloaded at www.gtz.de/de/dokumente/giz2011-en-agrobiodiv-best-practices.pdf.