

# "Cultivating Diversity"

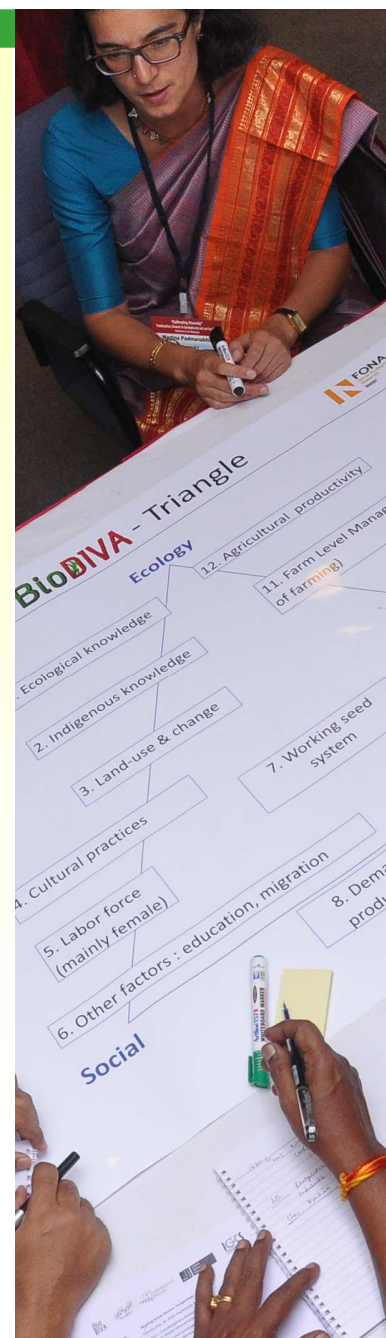
## Results from the national level dialogue workshop

The social, economic and ecological consequences of land use change in the district of Wayanad, Kerala (South India) are the main focus of BioDIVA. The research project employs an inter- and transdisciplinary approach. This briefing note summarizes the main results from the workshop: "National Level Dialogue - Transdisciplinary research on agrobiodiversity and land use change: Cultivating diversity", held by BioDIVA and its local partner, the M.S. Swaminathan Research Foundation (MSSRF) in Chennai, India, on September 2-4, 2013.

The event brought together participants from various backgrounds, including experts, civil society representatives and policy makers, with shared concerns about trends in land use change that are affecting agrobiodiversity. The workshop explored strategies for sustainable land use and policy integration in discussions around the following key topics: (1) 'Transdisciplinarity: Involving practitioners' knowledge to create solutions', (2) 'Feedback loops: Communicating science across levels', and (3) 'Transformation knowledge for gender equity and sustainability'. The workshop also included the launch of BioDIVA's new handbook on transdisciplinary approaches to agrobiodiversity research, 'Cultivate Diversity!'

The BioDIVA team and committee opened the workshop with a reflection on the project. The three 'tandem' PhD research groups shared their experiences from the field and of the tandem approach itself. In an inaugural session, speakers from BioDIVA and MSSRF introduced the two institutions and their research. In the following sessions, workshop participants from different academic disciplines presented their research on transdisciplinarity and land transformation in India.

Along with the presentations and the subsequent discussions, the workshop included interactive working groups and a plenary discussion. Prof. M.S. Swaminathan closed the workshop, expressing his good wishes for BioDIVA and his hopes that the partnership with MSSRF would continue.



## TOPICS

- Transdisciplinarity
- Equity and sustainability
- Agrobiodiversity
- Agroecosystems
- Land use change

## THE BIODIVA COMMITTEE

The BioDIVA research team uses a transdisciplinary approach to create transformation knowledge. The BioDIVA committee was created to help coordinate this work. The group consists of farmers and politicians from Wayanad from different socio-cultural and economic backgrounds. The committee helps to:

- Develop a sustained dialogue on land use change and biodiversity loss
- Mediate between academic research and local action



## *Transdisciplinary research and transformation*

Transdisciplinary research is an answer to the limited impact of conventional research in mitigating social and environmental problems, stated BioDIVA team leader Martina Padmanabhan. Many research findings are not transferred into practice. Transdisciplinary research brings the knowledge of lay persons from outside academia into the research process.

Speakers in this session introduced the principles of transdisciplinary research, discussed the practical difficulties involved, and presented examples of transdisciplinary research practice. The challenge of transdisciplinary research lies in merging theoretical discourse, data analysis and the results of an intense consultation process with a diversity of stakeholders. Transdisciplinary research builds on dialogue tools in order to integrate knowledge and facilitate joint learning. Reflection and feedback loops are typically built into the process of evaluating the research and its outcomes, providing inputs for decisions on next steps.

The resulting transformation knowledge enables stakeholders to change a situation from an unsustainable one to one where prospects for sustainability are more favourable. Transformation knowledge involves stakeholders jointly engaging in a learning process, which results in more feasible and relevant outcomes. Stakeholders know they have joint ownership of the research, and this motivates them to participate in the search for solutions by assessing and testing options for change. Multi-stakeholder co-operation is facilitated by capacity building to improve the problem-solving capacities of the group members. The spirit of cooperation and mutual respect helps to overcome social exclusion and marginalization.

Regarding the prevalence of transdisciplinary research in India, Prof. S. A. Abasi, Head of the Centre for Pollution Control and Energy Technology (CPET), Pondicherry University, stated that it is currently inhibited by the credit point system used to rank the products of scientists' work. In India, authors receive less credit points for publications with joint authorship. The more contributing authors, the less credit points are given to each one. As a result, collaboration across departments is still rare.

Using the example of paddy cultivation, Monish Jose (BioDIVA) explained the role that transdisciplinary approach can play in addressing land use change. Results of a ranking exercise indicated that farmers still consider "paddy" to be very important. However the area under paddy cultivation continues to decline. Transdisciplinary research can provide insights into the underlying reasons for these apparently contradictory findings.

Moreover, by combining empirical evidence on the major factors that determine the acreage allocation of farmland to paddy with the results of studies of farmers' short and long-term responsiveness to market and policy shifts, transdisciplinary research can help policy makers formulate balanced and effective policies to encourage paddy cultivation.



*Panel of speakers during discussions at thematic Session 1: "Transdisciplinary Research and Transformation Knowledge"*

## Equity and sustainability

Prof. Geethakutty from Kerala Agricultural University stated, that gender equity is among the key goals in sustainable agriculture management and planning. To achieve this, specific measures to overcome gender-blind policy-making in the Indian agricultural sector are required; for example the use of distributive justice and promotion of women-friendly technologies.

Dr. Rengalakshmi, coordinator of Gender & Grassroots Institutions at MSSRF, demanded that both women's and men's agrobiodiversity-related knowledge should be rewarded, recognized and utilized. Women's contributions to resource management are still not widely recognized or used.

BioDIVA team members Isabelle Kunze and T.R. Suma reported the findings of their study of the indigenous Kurichya community. The social and political organization of the community underpins the Kurichya's continued traditional management of agrobiodiversity. However, state development programs and agricultural policies that ignore their joint family system and collective farming traditions are forcing them to reorganize themselves. The results of this study highlighted the gendered nature of agricultural decision making processes. Formally, men take the decisions, but informally, women decide within the families.

During the discussion, Dr. James stated that agricultural policy should support women in agriculture. He suggested that fields should be given to women by the Indian government as part of a programme of land reforms.

## Agrobiodiversity, agroecosystems and land use change

In the session on "Land use change and sustainable development", Dr. Sasidhar, Senior Scientist at the Indo-German Center for Sustainability (IGCS), stated that 83% of the global land surface has been impacted by humans, and 60% of this has been degraded during the last 50 years. Factors affecting land use cover change (LUCC) include tenure security and land degradation.

## THE TANDEM APPROACH

Alongside interdisciplinary integration, developing disciplinary approaches in intercultural teams allows adaptation to the cultural setting of the study area. Accordingly, BioDIVA established three 'tandem' research groups in the fields of Sociology, Ecology and Economy.

Each team consists of one researcher based in Germany and one located in India. The assets of the tandem are their complementary knowledge systems.

The Indian researcher ensures that methodological concepts and tools used are culturally relevant, based on his or her working experience. The German-based counterpart contributes an outside perspective, drawing on a different theoretical, methodological and cultural background.

The tandem teams provided insights from their experiences of this approach during the conference.

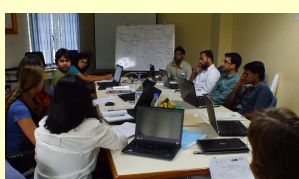


## THE CHALLENGE: INTEGRATING INTER- AND TRANS- DISCIPLINARY FINDINGS

BioDIVA's approach towards the creation of transformation knowledge started from the joint development of a research project.

In designing the project the team had to identify and integrate disciplinary theoretical frameworks and methodologies to shed light on a common research question.

During the project, BioDIVA benefited from ongoing discussions among team members, workshops, and team days. Feedback loops to integrate new findings and learning outcomes in the project were crucial.



While analysing disciplinary data, the team also worked on integrating results from different disciplines and knowledge systems. The team developed a conceptual framework, which was then discussed during the working group sessions.

BioDIVA scientist Dr. Nidhi Nagabhatla presented her study of the scope for an integration of spatio-temporal indicators of land use change into trans-disciplinary research. She argued that these data help validate both survey-based and stakeholder-based analysis. Both of these constituents of trans-disciplinary research are important: While scientific assessment can aid political decision making on land use, stakeholders' perceptions will often determine the future of agricultural landscapes.

Participatory and entrepreneurial approaches to agrobiodiversity conservation and the dissemination of farmers' crop varieties were presented by T.J. James, Advisor to the Peermade Development Society in Kerala. The society documents, develops and disseminates farmers innovations and indigenous knowledge practices. A successful example for the Peermade land-to-lab approach for the dissemination of rural technology is the revival of "ambakkadan", a hybrid variety of cassava with high productivity. The planting material was not available at local markets and is now sold through women's self-help groups. The group started with 30 women; now more than 300 women are actively cultivating the variety. Farmers who use cassava share part of their planting materials. Part of the harvest is consumed, but more than half is sold at the market.

Dr. Wagner, visiting scientist at IGCS, investigated LUCC impacts on water resources in the Mula and Mutha river catchments upstream of Pune, India. Future land use change scenarios, based on predictions of an urban growth and land use change model and development plans, were used as inputs to a hydrologic model, for assessment of possible future impacts of LUCC on water resources. His results indicate that the increase of urban area and the decrease of semi-natural and agricultural land lead to seasonal changes in the water balance components. An increase of water runoff from the drainage basin occurs at the beginning of the rainy season, whereas evaporation and transpiration by plants decrease in dry seasons. Impacts of land use changes are more pronounced in drier years, and less pronounced in extremely wet years.

BioDIVA researchers Prajeesh Parameswaran and Lydia Betz studied the impact of land use change and management intensification on floral and faunal diversity in rice ecosystems. The study focuses on changes in the relationship within the spider-cicada-plant community. Preliminary results indicate that the effects of changes on this community are complex and difficult to disentangle. No clear or general pattern emerges, or evidence that intensified management practices and land use change decrease spider and plant diversity in the rice fields, as was hypothesized. More plant species occur in fields with higher input of fertilizer and close to banana plantations; whereas spiders are more diverse in fields next to home gardens. The picture could change if additional features of the rice ecosystem are taken into account. Further analysis will look more closely at these complex relationships and how farmers can profit from a functioning ecosystem.



*Group discussion during the workshop*

## Working Group Session: Perspectives

Transformation knowledge for a sustainable development of agrobiodiversity in India was envisioned as one major output of the transdisciplinary research project BioDIVA. To this end, discussions and workshops across disciplines and countries played a key role. During a team retreat in Passau, members of the German team focused on pathways to integrate the research results of the different scientific disciplines of the project. A "sustainability triangle" was used to illustrate the main indicators of sustainability of paddy cultivation in Wayanad, as identified by the disciplines represented within BioDIVA, i.e., economics, ecology and sociology. During a team meeting in Chennai, the sustainability triangle was further developed together with the Indian team.

The working group session on perspectives at the National Level Dialogue Workshop focused on the development of pathways to combine practical and science-based knowledge. Three discussion groups were formed, whose participants were requested to provide inputs to the sustainability triangle model under the headings transdisciplinary research and transformation knowledge, sustainability, and gender equity.

Participants in the discussions noted that inputs from other disciplines could have illuminated further factors influencing the sustainability of paddy rice cultivation in Wayanad. These factors included the roles of specific actors, particularly the land mafia, power relations among actors, legal aspects, and decision making structures. Mrs. Mina Swaminathan suggested that the triangle should be embedded in a larger circle of influencing factors, systemic interactions and overlappings. During his closing speech, Prof. M.S. Swaminathan expressed his pleasure at BioDIVA's choice of land use as an indicator of sustainability.

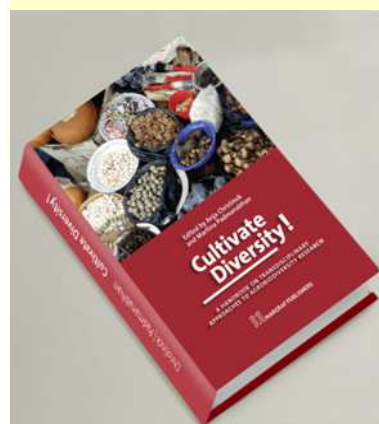
## CULTIVATE DIVERSITY!

One of the main outcomes of the BioDIVA research project was the publication "Cultivate Diversity! A Handbook on Transdisciplinary Approaches to Agrobiodiversity Research".

Readers from all disciplines, who are involved in research for sustainable development, will find valuable information in this handbook.

The main objective of the handbook is to provide a platform for sharing experiences and knowledge from various scientific disciplines and schools of thought.

The book covers theoretical frameworks, methods, and practical approaches. It aims to inspire new approaches to research, among institutions and in the field.



# Transdisciplinarity in practice: Linking academics with practitioners

The workshop's concluding plenary discussion focused on pathways for linking practitioners' and scientists' knowledge under the premise of transdisciplinarity. Prof. Sudhir Chella Rajan, Centre Coordinator of IGCS, argued that, for a scientist engaged in transdisciplinary research, it is important to cross the boundaries of rigour of one's own discipline. Scientists from different disciplines have to adopt shifting paradigms to communicate with each other (e.g. a soil scientist and economist). They no longer have to dig deep and stay anchored. The kind of knowledge coming out of practice has to be understood on its own terms.

Prof. Chella said that local communities do not necessarily always know best. But one has to distinguish local knowledge from the experience of carefully designed projects that don't work out in practice. What has been developed in theory has to be adapted and adopted according to local conditions. We need to learn from failure: bringing different disciplines and stakeholders together will not automatically produce the best solutions. If we want to learn how the world works, we have to look at the biases in our own knowledge and how these affect the outcomes of our work. We have to learn from where we went wrong.

The session's chair, Dr. A. Arivudai Nambi, Director of the Climate Change Program at MSSRF, pointed out that the central concepts of transdisciplinarity are its social relevance, the blend of conventional science with people's science, considering users' requirements, and the development of a common language. Transdisciplinarity should bring solutions for key areas, such as climate change. The interactive elements of transdisciplinarity, however, are not yet well understood. Mrs. Mina Swaminathan suggested that it is essential for transdisciplinary research to get the politicians at the table, because they are a major agent of change. Also the labourer group needs to be involved, because it is even larger than the farmers group. A key aspect of transdisciplinary research is the procreation of knowledge and the co-design of research. In this context, participants noted, that the research process should also be co-evaluated.

Transdisciplinary research challenges the self-conception of scientists as 'knowledgeable people'; they lose their supreme authority, argued BioDIVA head, Prof. Martina Padmanabhan. It allows for a deeper understanding of each other's contributions and greater mutual respect, reducing blind spots caused by 'scientific' reductions of problem situations.

The opportunities for exchange across boundaries have to be improved. Education needs to raise awareness of the variety of domains of expertise, and their respective strengths and limitations. The needs and activities of people are an integral part of topics, like agrobiodiversity, characterized by human-nature interactions. Theoretical transdisciplinary concepts should be adapted to the practical experiences gained through multi-stakeholder learning processes, drawing on the different kinds of knowledge held by different groups in society.



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