

The Uplands Program



Research for Sustainable Land Use and Rural
Development in Mountainous Regions of Southeast Asia

INTERNATIONAL SYMPOSIUM

Interdependencies Between Upland and Lowland Agriculture and Resource Management

1-4 April 2008

Stuttgart, Germany



Book of Abstracts

Deutsche
Forschungsgemeinschaft

DFG



Preface

Uplands are extremely important and highly vulnerable ecosystems. They operate as storage for fresh water and energy, provide a high degree of biodiversity and act as a significant provider of food for local people. They are at the same time under severe and increasing pressure caused by high population growth, immigration and resource exploitation, thereby contributing to poverty and food insecurity in rural areas. Looking at entire watersheds, the environmental and socioeconomic interdependencies between uplands and lowlands play a key role in preserving natural resources, reestablishing stable ecosystems and developing sustainable land use and livelihood concepts in those regions.

Interdependencies between uplands and lowlands in mountainous regions pose a particular challenge to agricultural and environmental research. The Uplands Program has been taking on this challenge since the year 2000 as a research program funded by the DFG as "Sonderforschungsbereich 564"; it addresses environmental sustainability, agricultural productivity, poverty and food insecurity. Research locations are the uplands of northern Thailand and northern Vietnam. In both countries the project cooperates with universities and research institutes as research partners.

After eight years of interdisciplinary research the Uplands Program organizes their third international symposium "Uplands 2008" in April 2008 in Stuttgart-Hohenheim, Germany. It intends to provide a forum for exchanging research experiences and results and viewpoints on interdependencies between upland and lowland agriculture, resource management and livelihoods with the international scientific community, development practitioners and students of development. The conference provides a multi- and interdisciplinary platform for scientists, natural resource management professionals and development experts on a wide range of environmental and socioeconomic topics addressing methodological, empirical research and integrated modeling issues.

The organizers look forward to stimulating exchanges of information, experiences and innovative ways of looking at upland - lowland interdependencies.

With best wishes for a successful symposium

The Organizing Committee

Content

Plenary Opening

Upland-Lowland Linkages, Poverty Reduction and Sustainability: Perspectives from South-East Asia <i>S. Pandey, H. Bhandari and H. B. Gurung</i>	1
The Need for Integrated Approaches in Sustainable Land Management <i>K. Herweg</i>	3

Contributed Paper Session I

Water Regime and Water Safety in Highlands under Changing Conditions

Rapid Hydrological Appraisal: Two Case Studies in Integrating Knowledge of Watershed Functions in Indonesia <i>B. Lusiana, R. H. Widodo, M. Van Noordwijk, E. Mulyoutami and D. A. Nugroho</i>	5
The Highlands: A Shared Water Tower in a Changing Climate and Changing Asia <i>A. Wilkes and J. Xu</i>	7
Effects of "ENSO-Events" and Rainforest Conversion on River Discharge and Water Resources in the Lowland in Central Sulawesi (Indonesia) <i>G. Gerold</i>	9
Rainfall-Runoff Relation in a Mountainous Watershed in Northern Thailand: An Approach towards Understanding Losses of Agrochemicals to Stream Waters <i>C. Hugenschmidt, J. Ingwersen, Y. Sukvanachaikul, P. Thavornyuikarn, K. Pansombat, S. Uhlenbrook and T. Streck</i>	11
The Role of Pedodiversity for Ecosystem Functioning (Biodiversity) and the Impact of Historical Land Use in Grassland Ecosystems <i>R. Gruendling and T. Scholten</i>	12

Adapting Animal Production to Upland-Lowland Resource Conditions

Cattle Keeping in Northern Mountains of Vietnam - Depending on Lowland and Highland Local Resources <i>T. T. Huyen Le, P. Herold and A. Valle Zárate</i>	13
Analysing Management Practices of Smallholder Pig Keepers in Northern Vietnam Using an Actor Oriented Approach <i>B. Häußner</i>	15
Nutritional Evaluation of Boiled Soybean and Ricebean as Replacement for Soybean Meal in Broiler Chicken Diets <i>N. H. Quang and E. S. Luis</i>	17
A Novel Beef Production System Based on Grass Resources by Applying Metabolic Imprinting <i>T. Gotoh, T. Fumita, T. Etoh, Y. Shiotsuka, K. Hayashi, Y. Nakamura and J. Wegner</i>	19

Market Linkages between Uplands and Lowlands

Linking Smallholder Farmers to High-Value Markets - Comparison of Upland and Lowland Farmers in Thailand <i>C. Schipmann and M. Qaim</i>	21
Agricultural Commercialization of the Karen Hill Tribes in Northern Thailand <i>P. Tipraqsa and P. Schreinemachers</i>	23
Assessing Consumer Preferences for Quality and Safety of Tangerine in Chiang Mai Province Using Choice Experiment Method <i>P. Suebpongsang, W. Polkongkaew and A. Daroonpate</i>	25
Marketing Opportunities for Traditional Food and Feed Crops in Northern Vietnam <i>M. Hai Nguyen and D. Khai Luu</i>	27
Product Quality and Marketing of Indigenous Pigs in the Mountainous Region of Vietnam <i>N. Van Hau, P. Thi Mai Huong, B. Kaufmann, M. Mergenthaler and A. Valle Zárate</i>	29

Poster Session I

Land Use Change and Natural Resource Flows between Upland and Lowland Environments

Effects of Low Input Nitrogen Application on Photosynthetic Functions of Different Rice Species <i>T. Araki, S. Ohnari, E. Kumagai and F. Kubota</i>	31
Land Use Change in the Mae Sa Watershed, Thailand, 1996-2006 and Guidelines for Management <i>W. Nuipakdee and J. Yawichai</i>	33
Improving Living Standards of Rural Farming People through Water Recourses Development: An Example of an Integrated Spatial Approach from Northern Thailand <i>K. Bahadur K.C., W. Doppler and J. Kitchaichareon</i>	35
Impact of Land Use Systems on Soil Erosion in Limestone Areas of Northern Thailand <i>S. Wicharuck, U. Schuler, L. Herrmann, M. Panomtaranichagul and K. Stahr</i>	37
Modeling the Fate of Nutrients and Pesticides in Two Catchments with Paddy Rice-Aquaculture Systems in Northern Vietnam <i>N. La, M. Anyusheva, M. Lamers, V. Van Nguyen, A. Fangmeier and T. Streck</i>	39
The Fate of Agrochemicals in Paddy Rice-Aquaculture Systems in Northern Vietnam <i>M. Anyusheva, M. Lamers, N. La, V. Van Nguyen, K. Schaworf, A. Fangmeier and T. Streck</i>	41
Does <i>Brachiaria Humidicola</i> Produce Natural Nitrification Inhibitors Released as Root Exudates? <i>M. Kazem Souri, G. Neumann and V. Römheld</i>	43
Plot Scale Modelling of Erosion and Runoff with WaNuLCAS 3.2 <i>M. Lippe</i>	45

Land Suitability Assessment for the Large Cardamom <i>Amomum subulatum</i> Roxb in Hills of Kathmandu Valley <i>N. Baniya and M. Böehme</i>	47
---	----

Social and Cultural Interdependencies between Upland and Lowland Communities

Migration and Resource Utilization in a Community-Based Forest Management in Rizal, Philippines <i>C. G. Taguam, J. A. Bacod and R. C. Payuan</i>	49
---	----

Contributed Paper Session II

Linking Lowlands and Uplands Agriculture in Integrated Models

Application of Multi-Agent Systems to Assess Sustainability of Farming Systems in Mountainous Areas <i>C. Potchanasin, B. Zimmermann, N. Becu, S. Praneetvatakul and J. Zeddies</i>	51
Integrated Modeling to Guide Watershed Development: A Case Study from Northern Thailand <i>P. Schreinemachers, T. Berger, M. Lippe, C. Hugenschmidt, A. Sirijinda, C. Potchanasin, T. Hilger, G. Cadisch and S. Praneetvatakul</i>	53
Modelling the Impact of Smallholder Land-Use Decisions on Rattan <i>F. von Walter and J. Barkmann</i>	55
What Make Farmers Appreciate Sustainable Farming: The Philippine Experience <i>L. C. Malicsi</i>	59

Innovations in Flower Induction in Tropical Tree Crops

Effects of KClO ₃ and Temperature on Flowering and Leaf Gas Exchange Characteristics in Longan <i>C. Sritontip, P. Tiayon, K. Sringarm, D. Naphrom, P. Sruamsiri, P. Manochai, M. Hegele and J. N. Wünsche</i>	61
Experiments to Explain the Essential Role of Mature Leaves on KClO ₃ Induced Flower Induction of Longan <i>P. Potchanasin, K. Sringarm, P. Sruamsiri, M. Hegele and F. Bangerth</i>	63
Physiology of Flowering in Lychee Trees Grown in Mountainous Areas of Thailand <i>D. Naphrom, C. Sritontip and P. Sruamsiri</i>	65
The Molecular Basis of Flowering in Longan <i>P. Tiayon, K. Pongsriwat, P. Sruamsiri, A. Samach, M. Hegele and J. N. Wünsche</i>	67

Rewards for the Upland Poor for Downstream-Friendly Practices and Ecological Services

Rewards for Environmental Services: How to Engage the Poor? <i>B. Leimona, M. van Noordwijk, G. Villamor and S. Uphadyaya</i>	69
--	----

Payments for Environmental Services in Upper-Catchments of Vietnam: Will it Help the Poorest? <i>D. Jourdain, D. Anh Tai, D. Dinh Quang and S. Pandey</i>	71
Making Upland Resource Managers in Northern Thailand More Receptive to "Downstream Friendly" Agricultural Practices through Compensation <i>C. Sangkapatitux, A. Neef, K. Nanthasen and N. Pramoon</i>	73
Payment for Environmental Services (PES) - A Viability Study for Watershed Services in Northern Thailand and Lao PDR <i>A. George, A. Pierret, A. Boonsaner and O. Planchon</i>	75

Contributed Paper Session III

Land Use Change and Associated Materials Fluxes

Land Use Changes in Himalaya and Their Impacts on Agricultural Sustainability in Plains of North India <i>P. C. Tiwari and B. Joshi</i>	77
Linkage between Sediment Induced Spatial Variability in Soil Quality and Rice Performance in Paddy Fields in Mountainous Regions of Vietnam <i>P. Schmitter, M. Hertel, G. Dercon, T. Hilger, T. Thi Le Ha, N. Huu Thanh, T. Duc Vien, N. Van Dung and G. Cadisch</i>	79
Soil Translocation Assessment in a Mountainous Area of NW-Vietnam - Consequences for Land Use Planning <i>C. Gerhard, N. Dinh Cong and K. Stahr</i>	81
Assessing Alternative Conservation Strategies on a Hillside Cropping System of Northeast Thailand by Using WaNuLCAS <i>W. Pansak, T. Hilger, M. Lippe, T. Kongkaew and G. Cadisch</i>	83
Modeling Land Use Change Dynamics of a Small Watershed in Northwest Vietnam <i>M. Lippe</i>	85

Innovations in Landscape Management

Transitions towards Sustainable Livelihoods through Local Innovations in Upland-Lowland Integration <i>B. Limnirankul, C. Muangsuk and P. Gypmantasiri</i>	87
Improvement of Yield and Fruit Quality of Mango Neglected Orchards in Yen Chau, Son La <i>P. Thi Huong</i>	89
Adaptation of Shifting Cultivation Systems in Lao PDR: Potential and Challenges of New Market Forces <i>V. Phengvichith and H. Weyerhaeuser</i>	91
Livelihood Strategies of Karen Uplanders in Mae Hong Son Province, Northwestern Thailand <i>R. von Luebke</i>	93

Managing Rice Landscapes in the Uplands for Improvement of Livelihoods and Conserving Resources <i>B. Samson, R. Ritzema, K. Songyikhangsuthor, T. Keonakhone, B. Vongphuthone and S. Pandey</i>	95
Valuation of Upland and Lowland Resources	
Bounded Rationality in Contingent Valuation: Empirical Evidence Using Cognitive Psychology <i>O. Frör</i>	99
Refining Direct Methods of Environmental Valuation: Which Insights Can Be Gained from Citizen Expert Groups? <i>M. Ahlheim, B. Ekasingh, O. Frör, A. Heinke, J. Kitchaicharoen, A. Neef, V. Punyawadee, C. Sangkapitux and N. Siphurmsukskul</i>	101
Economic Losses Due to Landslides in Upland Areas of Yen Chau District in Vietnam: Causes, Protection Strategies and Willingness to Pay <i>M. Ahlheim, P. Van Dinh, N. Minh Duc, O. Frör, A. Heinke, A. Keil, C. Saint-Macary and M. Zeller</i>	103
Could Carbon Payments Be a Solution to Deforestation in Central Sulawesi? <i>C. Seeberg-Elverfeldt, S. Schwarze and M. Zeller</i>	105
Determinants of Adoption of Soil Conservation Technologies in Upland Areas of Northern Vietnam <i>C. Saint-Macary, P. Thi My Dung, A. Keil, L. Thi Ai Van, D. Thi Tuyet Van and M. Zeller</i>	107
Plenary Session	
Water and Nutrient Budgets of Native and Managed Watersheds under Tropical Montane Forest in Ecuador <i>W. Wilcke</i>	109
Links between Upland Agriculture and Lowland Agriculture in 21st Century Vietnam <i>T. Duc Vien</i>	111
Integrated Modelling Approaches <i>G. Cadisch</i>	113
Poster Session II	
Innovation Processes and Knowledge Transfers in Upland and Lowland Regions	
The Results of Study on Improvement Body Size and Productivity of Vietnamese Horse for Mountainous Area <i>C. Ta Van, H. Dang Dinh and D. Nguyen Van</i>	115
Sustainable Agricultural Practices of Upland and Lowland Households in the Mae Sa Watershed, Thailand <i>S. Praneetvatakul, A. Sirijinda and P. Schreinemachers</i>	117

Identifying Land Management and Livelihood Options and Opportunities for Shifting Cultivation and Sloping Land Areas <i>G. B. Sharma and B. Regmi</i>	119
Optimization of Pig Breeding at Smallholder Farms in North-West Vietnam <i>R. Rößler, P. Herold, A. Willam, H.-P. Piepho, H. Momm and A. Valle Zárate</i>	121
Application of Airborne Radiometric and Magnetic Data in Lithological Mapping (Parent Material of Soil Formation Factor) of Mae Sa Water Shade, Changwat Chaing Mai, Thailand <i>W. Rangubpit</i>	123
Quality and Microbial Changes of Fresh-Cut Mango, Lychee and Longan <i>N. Ratanapanone</i>	125
Promoting Community-Managed Agroforestry Extension towards Sustainable Upland Development in the Philippines <i>L. D. Landicho, R. D. Cabahug, C. C. de Luna, R. F. Paelmo</i>	127
Utilization of Paper Mulberry by Farmers in Laos: A Comparative Study of the Villages of Bokeo and Luang Prabang <i>K. Ogata, M. Chanhsom, L. Phonsavanh, W. Tajeena, S. Fukuda and Y. Miyazawa</i>	129
Economic Linkages, Institutional Arrangements and Trade Flows between Upland and Lowland Regions	
Interdependence of Upland and Lowland Village Communities for Forest Products and Water Flow in Meghalaya, India <i>B. K. Tiwari</i>	131
Challenges and Opportunities for Smallholder Upland and Lowland Pig Production Systems in Northern Vietnam <i>T. Huu Cuong and M. Qaim</i>	133
Farmers' Indigenous Knowledge of Northern Upland Vietnam in Their Interaction with Farmer Field School <i>T. Sy Hai and O. Salemink</i>	135

Contributed Paper Session IV

Ecosystem Services in Tropical Landscapes

The Munessa project: an Ethiopian perspective on functional ecology and management of mountain forests <i>Georg Guggenberger, Erwin Beck, Masresha Fetene, Asferachew Abate, Wolfgang Zech, Klaus Müller-Hohenstein, Demel Teketa, Florian Fritzsche, Alemu Gezahegne, Reinhard Mosandl, Hany El Kateb, Ingrid Kottke, Tesfaye Wubet, Simone Strobl, Getachew Tesfaye, Andreas Nenninger, Girma Abebe, Achim Bräuning, Aster Gebrekirstos, Bruno Glaser</i>	137
Water in Soils of a Tropical Mountain Forest in South Ecuador <i>S. Engelhardt, B. Huwe, C. Bogner</i>	139
The Impact of Land Use and Climate Change on Water Quality in Two Meso-Scale Riverbasins <i>T. Gaiser, J. Ganoulis, H.-G. Schwarz-Von-Raumer, A. Printz, M. A. Igue, M. Henseler, H. Bakara and K. Stahr</i>	141

Using Ants to Measure a Degree of Human Disturbances in Agroecosystems <i>K. Ogata, W. Sakchoowong, Y. Kuboki and W. Jaitrong</i>	143
--	-----

Innovations of Post-Harvest Technology of Tropical Fruits

The Role of Harvest Maturity in Postharvest Concepts for Fresh Longan Fruits from Northern Thailand <i>M. Reichel, S. Kienzle, S. Neidhart, P. Srumsiri, and R. Carle</i>	145
Litchi Drying by Upland Producers Versus Established Lowland Processors: Can Value-Adding Be Reallocated? <i>M. Nagle, B. Mahayothee, M. Haewsungcharern, A. Neef, C. Sangkapitux, H. Leis, S. Janjai and J. Müller</i>	147
Solar Drying of Peeled Longan Using Solar Tunnel Dryer <i>S. Janjai, N. Lamert, Y. Boonrod, B. K. Bala, B. Mahayothee, M. Haewsungcharern, M. Nagle, H. Leis and J. Müller</i>	149
Fruit Maturity and Quality at-Harvest and ex-Store of Selectively Picked Mangos (<i>Magnifera indica</i> L., cvs. 'Tron' and 'Hoi') <i>V. Thanh Hai, P. Thi Huong, P. Srumsiri, M. Hegele and J. N. Wünsche</i>	151

Integration and Marginalization of Upland People by Lowland Societies

Marginalization of Upland Communities in the Post-Tsunami Aceh and Nias in Indonesia <i>L. Joshi, S. Budidarsono and E. Nugraha</i>	153
Marginalisation through Integration? Vietnam's (Northern) Uplands in the Postcolonial Context <i>R. Friederichsen</i>	155
Knowledge Transfer in the Context of Upland and Lowland Agricultural Interaction in Northern Vietnam <i>T. Thi Minh, A. Neef and V. Hoffmann</i>	157
Moving People, Shifting Problems: The Impact of State-Enforced Lowland-Upland Resettlement on Land Use and Natural Resources in Ethiopia <i>I. Eguavoen and T. Stellmacher</i>	160

Contributed Paper Session V

Soil, Water, Crop and Animal Interactions in Tropical River Catchments

Upscaling of Soil Mapping in NW-Thailand: Gaining Synergy by Blending Different Approaches <i>U. Schuler, L. Herrmann, N. Anongrak and K. Stahr</i>	161
Traditional Knowledge on Highland Forest Management and Tropical Forest Restoration <i>P. Wangpakapattanawong, D. Schmidy-Vogt and S. Elliott</i>	163

Suitable Farm Ponds into the Integrated Watershed Development Programme in Northeast Thailand <i>T. Wangkahart, P.-H. Pathak, S. P. Wani, B. Toomsan, S. Idhipong, S. Chuachin, P. Seehaban and P. Chueychoom</i>	165
The Improvement of Crop Productivity and Water Use Efficiency for Sustainable Highland Rainfed Agriculture <i>M. Panomtaranichagul, K. Stahr, S. Nareubal, S. Wicharuck and T. Chareonmeung</i>	167
Rice and Fishery Productivities in Relation to Potential Water Resources in Red River Basin, Vietnam <i>S. Fukuda, P. Van Cuong, T. Araki, T. Quang Huy, D. Nguyen Hai, H. Thi Lam Tra, Y. Mori, Y. Shimasaki, M. Matsumoto, H. Viet Cuong and K. Kurosawa</i>	169
Advances in Tropical Fruit Tree Management	
Degradation and Movement of Chlorate in Longan Plantations <i>S. Ongprasert, W. Wiriy-Alongkorn, W. Spreer and V. Römheld</i>	171
Effect of Concentration and Duration of Colchicine Treatment on Polyploidy Induction in <i>Dendrobium Scabrilingue</i> Lindl. in vitro <i>S. Sarathum, M. Nanakon and S. Tantivivat</i>	173
Applicability of Deficit Irrigation Strategies in Lychee and Longan Production in Thailand <i>W. Spreer, K. Satienerakul, S. Ongprasert and J. Müller</i>	175
Possible Physiological Mechanism of Premature Fruit Drop in Mango (<i>Mangifera Indica</i> L.) in Northern Vietnam <i>M. G. Roemer, P. Thi Huong, P. Srumsiri, M. Hegele and J. N. Wünsche</i>	177
Efficiency of Foliar Micronutrient Fertilization in Lychee (<i>Litchi Chinensis</i> Sonn.) <i>S. Will, T. Müller and V. Römheld</i>	179
Cash Crops and Sustainability Analysis in Upland Agriculture	
Importance of Collective Alps for Local Farmers and for Preservation of Mountain Areas <i>N. Roeder and A. Gueydon</i>	181
Structure of Production System and Constraints of Tea Sector in North Western Vietnam <i>Y. Saigenji and M. Zeller</i>	183
Rubber-Boom in Xishuangbanna - Where Will It End? <i>G. Langenberger, A. Ghorbani and J. Liu</i>	185