



FBLI REGIONAL BRIEF

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Exploring linkages between agriculture, health and ecosystems: Highlights of research by the Field Building Leadership Initiative

FBLI Coordinating Unit

Intensification of crop and livestock production can improve food, nutrition, and income security; however, without sustainable resource management, intensification can also lead to increased agricultural-related health risks, environmental degradation, and biodiversity loss. This is especially true in Southeast Asia, a region facing rapid economic growth. To address this complex challenge, a better understand of the interactions between agricultural practices, human health, and ecosystems are required.

The Field Building Leadership Initiative (FBLI), supported by IDRC, aims to explore linkages between intensive agricultural practices and human health in Southeast Asia. Developed jointly by research centres in China, Indonesia, Thailand and Vietnam, and launched in 2012, this five-year initiative allows researchers and their partners to carry out research, capacity building, policy advocacy and networking to inform agricultural practice and policy. Generating scientific evidence can help mitigate health risks while maintaining the socio-economic advantages of agricultural intensification.

Building regional research

The FBLI's research process is guided by Ecohealth principles including transdisciplinarity, participation, social and gender equity, and knowledge-to-action. The FBLI team, working with stakeholders from the onset of research for over three years, have generated new knowledge and developed interventions to promote sustainable agricultural practices. As agriculture is an important source for livelihoods in the region, careful consideration was given towards exploring economic benefits associated with changing practices, as well as gender and social equity, and empowerment of vulnerable groups.

In **China**, researchers and stakeholders are investigating the impact of chemical pesticides used for vegetable and fruit production on the health of farmers and ecosystems in Yuanmou County, Yunnan Province. Pesticide residues were detected in samples of vegetables, fruits, soil, water, and urine samples of adults and children. Locally designed calendars, posters, and "street theatres" were used to provide health education on pesticide risks.



"Street theatre" was used to provide health education on pesticide risks at project sites in Yuanmou.

This research also revealed that despite the increase of large-scale vegetable and fruit plantations, agricultural worker's occupational health was not adequately addressed by current health care policies. Researchers are working with these groups to advocate for addressing occupational health risks in healthcare agendas.

In **Vietnam**, the human health risks from exposure to biogas wastewater from pig farms are being explored in Ha Nam province. Biogas wastewater samples were found positive for four pathogens harmful to humans and exceeded national standards of wastewater. Health risk perceptions and practices of biogas use in the community were also assessed. As biogas systems are a common method to manage animal waste in Vietnam, researchers are implementing a set of interventions to promote good sanitation practices in the study area. Communication tools including booklets and flyers with information on how to best use the biogas have been distributed to 72 farms in the community. Key messages were also promoted in the community's traditional regulation document "Hương Ước".



Researchers collecting biogas effluent samples.

Small scale dairy farms are important sources of income for farmers in several districts of Pangalengan, West Java, **Indonesia**. By applying an Ecohealth approach, researchers and farmers worked together to implement an intervention that converts farm waste into herbal feed supplements, worm casting, earthworm extract, and fertilizers to help support human and environmental health, as well as farmers' income. These products have been lab and field tested, and are currently being used by livestock and crop farmers beyond Pangalengan. A business incubator has been formed to facilitate product commercialization. These products were used by over 230 farmers, and discussions with government officials are ongoing to promote eco-friendly agricultural products, allowing for sustained benefits associated with these interventions.

Rubber plantations are rapidly expanding in **Thailand** and Southeast Asia leading to deforestation, loss of biodiversity, influx of labour workers, and changes in livelihoods.



Tapping a rubber tree at a rubber plantation in Thailand.

Research conducted in several districts of Chachoengsao province have showed a direct correlation between crop expansion and increased risk of vector-borne diseases (e.g., dengue, chikungunya and malaria) especially among rubber workers. An evaluation of 109 rubber plantations revealed biological and chemical contaminants in groundwater and other natural reservoirs due to heavy use of fertilizers and herbicides. Through collaborating with migrant workers, crop owners, health care providers, and other government officials, the team is developing intervention tools and strategies to mitigate health risks associated with rubber plantations.



Dairy cattle farm in Indonesia.

Sustaining Ecohealth practice

The FBLI's capacity building supports the development of sustainable cohorts of Ecohealth practitioners and researchers. Ecohealth curricula have been integrated in four universities in Southeast Asia and a degree program in Ecohealth is currently being developed at Mahidol University in Thailand. The Future Leader Program, an annual program, aims to build leadership skills, global perspectives, and effective multi-sectoral collaboration of multidisciplinary professional groups. Since 2014, over 200 participants from ten Asian countries have participated in the Future Leader Program.



Participants at the Global Health True Leaders workshop in China.



FBLI team at mid-term research workshop in Da Nang, Vietnam.

The integration of FBLI research results into agricultural management practices is testimony of the rigorous research efforts and productive engagement with relevant stakeholders. The FBLI also supports policy advocacy, for example through forming policy alliance groups in member countries consisting of mid-level policy makers, senior FBLI researchers and representatives from other regional networks. Future outcomes of FBLI will continue to strengthen the emerging field of Ecohealth research and practice, for the mitigation of health risks associated with agricultural intensification, while maintaining benefits.

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