Rice cultivation in Southeast Asia: Five years of lessons learned by LEGATO

August 15 2016

A view of the Kinakin rice terraces, Luzon, Philippines. Credit: Pavel Stoev

Five years of irrigated rice cultivation research reached its pinnacle at the Final LEGATO Conference, which took place from 6 to 11 August 2016 in Banaue, Philippines. LEGATO is a BMBF (German Federal

Ministry of Education and Research) funded project, coordinated by the Helmholtz-Centre for Environmental Research (UFZ), Germany.

The international team of scientists presented results from dedicated studies covering a wide range of rice cultivation aspects in Southeast Asia, ranging from the influence of Silicon availability in soils on rice production and the contribution of pollinators and soil organisms to biodiversity and nutrient provisioning, towards discussing the importance of the socio-cultural context for sustainable development or ecotourism in the study regions.

Rice is an important crop and staple food in the Southeast Asian region; however, the growing pressures of our changing world pose difficulties on its production. LEGATO research focuses on providing guidelines for optimising rice ecosystem functions and services given the local socio-cultural conditions and their stabilisation under future global and particular land use change, which will particularly affect South and Southeast Asia.

As an important contribution to rice cultivation studies, research on the effects of Silicon (Si) was able to highlight the benefits of this element for the health of rice crops. Having tested the effects of Si fertilization on Si uptake and growth of rice and on decomposability of the produced straw in Northern Vietnam, LEGATO researchers demonstrated, that Si application to the soil increased Si uptake by rice and has the potential to improve rice yields.

Recommendations on the impacts of decomposition driven by invertebrates in tropical rice ecosystem as well as management strategies for farmers and practitioners were provided. The scientists also presented studies on the effects of regional environmental drivers and landscape complexity on species composition in rice-dominated agroecosystems.

Important part was also reserved for the socio-cultural aspects relevant for ecosystem services in LEGATO rice agroecosystems. Results have shown that achieving a shared understanding of the role of ES within the social-ecological context can already be beneficial for the decision-making process.

"LEGATO research has aimed to take into account a complexity of factors that might influence achieving sustainable rice production in the region, while at the same time taking into account protecting biodiversity and natural resources," explains LEGATO Co-ordinator Prof. Josef Settele, Helmholtz-Centre for Environmental Research (UFZ).

"Our researchers explored rice production in the region from a variety of angles, leading to recommendations for policy makers and practitioners alike, taking into consideration not only the ecological and economic aspects, but also the socio-cultural landscape in the region."

More information: Johannes Förster et al, Assessing ecosystem services for informing land-use decisions: a problem-oriented approach, *Ecology and Society* (2015). DOI: 10.5751/ES-07804-200331

Provided by Pensoft Publishers