



Steep-slope cultivated landscapes: towards climate-resilient water resources management

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One of the most important tasks for humans in the 21st century is to ensure food security in the face of water scarcity. Steep-slope cultivated landscapes are widely distributed and feed more than 10% people in the world. They play an important role in Sustainable Development Goals (SDG) set in the United Nations Sustainable Development Summit which aimed to thoroughly solve the food problems in a sustainable way. In addition, more than 49 steep-slope cultivated landscapes are recognised and protected by UNESCO and FAO for their cultural and agronomic importance. **It is necessary to find appropriate solutions towards climate-resilient water resources management and save more water for other ecosystems or human activities.**

Climate change-induced drought and high intensity rainstorms are global challenges for water resources management in agricultural landscapes. Growing aridity and extreme rainfall are particularly exacerbating the problem of water scarcity in steep slope cultivated landscapes. Though a number of studies have shown the potential impact of climate change on agricultural systems, little is known about role of water resource management (water storages, water harvest, drainage systems, etc.) in the mitigation of these climate impacts to ensure sustainable farming in steep slope agricultural landscapes. **The aim of our work is to analyse the threats and challenges of steep-slope agriculture due to climate change and provide examples of resilient water management and agricultural practices in these landscapes.** In detail, the aims are to better understand and compare how shifting climatic zones particularly affect steep cultivated landscapes and to find a feasible way for water storage to sustain ecosystem service and agricultural cultivation on hillslope in long periods of drought. GIS-based techniques were employed to determine the global distribution of steep agricultural landscapes, and to quantify the fraction of these that are facing future aridity. Finally, key examples of best practices in sustainable water resource management around the world are discussed, providing a guideline for improving the resilience of steep cultivation systems in future climatic conditions.