EGU22-5092, updated on 09 Sep 2022
https://doi.org/10.5194/egusphere-egu22-5092
EGU General Assembly 2022

Influence of water resource management on runoff trapping under different rainfall events based on remote sense technology in steep-slope agricultural landscapes

Wendi Wang, Eugenio Straffelini, and Paolo Tarolli
Department Land, Environment, Agriculture and Forestry, University of Padova, Legnaro, Italy (paolo.tarolli@unipd.it; wendi.wang@studenti.unipd.it)

One of the important issues faced by human in 21st century is to meet the need of food particularly in the background of increasing population. Steep-slope agricultural landscapes are making a relevant contribution for food protection. To protect and mitigate the impact of more frequent rainfall events as well as improve the food production in, more researches about how to increase water resource efficiency and management is necessary. In addition, understanding the interactions between water management infrastructure and runoff process is a great concern on the sustainable development of steep-slope agricultural landscapes. Several researches focused on water and soil conservation measures aims at soil erosion control, while less studies were conducted to study on runoff trapping under different rainfall intensities and water managements measures through the remote sensing data. In this study, we simulated surface water flow under different rainfall events before and after the application of designed water storages network to search the best solution for water runoff mitigation and water conservation in steep-slope agricultural areas. In detail, our works focus on (1) to design the sustainable and cost-effective water management infrastructures to the study area; (2) to quantify the amount of water resource maintained by appropriate management measures; (3) to simulated the overflow in steep slope agricultural areas under different rainfall conditions using hydrologic model based on high-resolution topography derived by remote sense data, with the aims to test the impacts of designed water storages in saving water and mitigating runoff. The research results not only have theoretical significance, but also provide a more accurate example of the how to design the reliable water resource managements in steep slope agricultural areas under the background of climate change.