



## **Relationships between vegetation cover characters and shallow landslides**

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Shallow landslide susceptibility assessments usually focus on parametrization of hydraulic and geotechnical features of soils. Instead, the role of vegetation cover on slope stability is often scarcely analysed. For this reason, this work focuses on the quantitative assessment of the influence of vegetation on shear strength for shallow landsliding. A study area affected by shallow landslides was chosen in the Garfagnana basin (Northern Apennines, Italy), where field measurements on under-ground vegetation (Root Area Ratio - RAR) and above-ground vegetation (Leaf Area Index - LAI and vegetation load) were carried out inside, in the neighbour and far (i.e. "stable areas") from shallow landslide locations.

Acquisition of data within landslides areas was supported by means of a multi-temporal landslide inventory already available for the study area. Underground data were collected in trench profiles, while above-ground data were acquired by using a digital relascope as well as implementing vegetation cover photography methods. Correlation tests were performed among results (dataset of about 150 measurements) and morphometric parameters such as aspect, elevation, flow accumulation and slope. Moreover, further analysis was carried out to evaluate relationships between vegetational types and the magnitude of measured vegetation (underground and above-ground) data. RAR allowed us to estimate the root-related contribution to soil cohesion by the application of the revised version of the W&W model. Results show that the weight of vegetation plays a minor influence on slope stability. Instead, root reinforcement to soil (in terms of root-related cohesion) plays a relevant role for depths involved in shallow landslides. Comparison among vegetation data obtained inside, in the neighbourhood and far from landslide areas allowed us to highlight that the latter show higher values of RAR and smaller LAI values.