RIPARIAN VEGETATION SURVEYS FOR ROUGHNESS ESTIMATION

Signorile A. [1], Saracino R.[1]*, Dani A. [1], Rillo Migliorini Giovannini M. [1] and Preti F. [1]

1 Department of Agricultural, Food, Environmental and Forestry Sciences and Technologies, University of Florence, 50144 Firenze, Italy

ABSTRACT

Vegetation growth along rivers may have effects on water resistance and velocity distribution. Roughness evaluation is crucial in constructing river stage-discharge curves, due to its great importance in river management and risk assessment. Usually, land managers mechanically remove vegetation to increase flow conveyance and reduce flooding risk, with negative effects on the riverine ecosystem and hydraulic risk downstream.

The study aims to implement a useful methodology for management planning along vegetated riparian zones through the development evaluation of both unmanaged and anthropically disturbed riparian ecosystems, using tree stands quantitative parameters required to estimate roughness caused by riparian vegetation.

For each watercourse, it was also possible to evaluate the equivalent roughness dependent on river morphology and the effective flow resistance over time.

The outputs of vegetation parameters analysis also may provide practical support in gentle maintenance interventions of Tuscan watercourses planning, to ensure positive effects both on water flow and on riverine ecosystem.

KEYWORDS

Ecohydraulics, Riparian vegetation, Roughness, Field surveys, Vegetation management