

Landscape features

Impact: Soil erosion

Reference 27

Maetens, W; Poesen, J; Vanmaerck, M 2012 How effective are soil conservation techniques in reducing plot runoff and soil loss in Europe and the Mediterranean? EARTH-SCIENCE REVIEWS, 115(1–2), 21-36.
10.1016/j.earscirev.2012.08.003

Background and objective

The effects of soil and water conservation techniques (SWCTs) on annual runoff (Ra), runoff coefficients (RCa) and annual soil loss (SLa) at the plot scale have been extensively tested on field runoff plots in Europe and the Mediterranean. Nevertheless, a comprehensive overview of these effects and the factors controlling the effectiveness of SWCTs is lacking. The objectives of this paper are: 1) to provide an overview of field plot data on effectiveness of soil and water conservation techniques (SWCT) in reducing annual runoff and annual soil loss in Europe and the Mediterranean; 2) to quantify the effectiveness of different SWCT types in reducing both Ra and SLa and to explore the effect of SWCTs on the relations between annual run-off and annual soil loss and 3) to explore the relations of SWCT effectiveness with some important variables that were reported in the experimental studies and the number of consecutive years of SWCT application.

Search strategy and selection criteria

Annual runoff and soil loss data, measured on bounded plots where soil and water conservation techniques (SWCT) applied for Europe and the Mediterranean were collected from research papers, books, project reports and PhD. Theses. 1) Studies have to be based in Europe or in the Mediterranean, 2) provide field-measured data on the effectiveness of various soil water conservation techniques (SWCT)s in reducing both runoff and soil loss.

Data and analysis

To quantify the effectiveness of specific SWCTs, runoff ratios (RR) and soil loss ratios (SLR) were calculated for all paired plots in the database.

Number of papers	Population	Intervention	Comparator	Outcome	Quality score
111	Cropland	1. Buffer strips; 2) Contour bunds and terraces	Conventional practices	Metric: Run-off; soil erosion; Effect size: Difference of of the considered metrics between intervention and control	31%

Results

- Buffer strips are more effective in reducing soil loss than runoff.
- Terraces were not effective in reducing runoff and soil loss.
- Terraces were not effective in reducing runoff and soil loss.
- NA

- NA

Factors influencing effect sizes

- NA : NA
- NA : NA
- NA : NA

Conclusion

Buffer strips are effective in reducing soil loss. Terraces were not effective in reducing runoff and soil loss, while contour bunds were effective in reducing both of them.