

SINGLE-IMPACT FICHE

LANDSCAPE FEATURES

IMPACT: SOIL WATER RETENTION

Data extracted in October 2021

Note to the reader: This fiche summarises the impact of landscape features (terraces¹) on SOIL WATER RETENTION. It is based on 2 peer-reviewed synthesis research papers², including 84 and 300 individual studies.

1. WEIGHT OF THE EVIDENCE

- CONSISTENCY OF THE IMPACT:
 - Terraces have a positive effect on soil water retention (i.e. increase of soil water retention) compared to cropland without terraces, according to 1 of the synthesis papers reviewed (see **Table 1**). Another synthesis paper reported relevant results, but without statistical test of the effects and it is labelled as uncertain. Details are provided below in Table 2 and in the summary reports.

Between the 2 reviewed synthesis papers, one includes data collected in Europe (see **Table 2**).

Table 1. Summary of effects. The numbers between parentheses indicate the number of synthesis papers with a quality score of at least 50%. Details on quality criteria can be found in the next section.

| Impact | Intervention | Positive | Negative | No effect | Uncertain* |
|-------------------------------|--------------|----------|----------|-----------|------------|
| Increase soil water retention | Terraces | 1 (1) | 0 | 0 | 1 (0) |

* Number of synthesis papers that report relevant results but without statistical test comparison of the intervention and the control.

QUALITY OF THE SYNTHESIS PAPERS: *The quality score summarises 16 criteria assessing the quality of three main aspects of the synthesis papers: 1) the literature search strategy and studies selection; 2) the statistical analysis; 3) the potential bias. Details on quality criteria can be found in the methodology section of this WIKI.*

2. IMPACTS

The main characteristics and results of the synthesis papers are summarised in **Table 2**. Summaries of the meta-analyses provide fuller information about the results reported in each synthesis paper, in particular about the modulation of effects by factors related to soil, climate and management practices.

Table 2. Main characteristics of the synthesis papers reporting impacts of landscape features on soil water retention. The references are ordered chronologically with the most recent publication date first.

¹ Described in the General Fiche.

² Research synthesis papers include a formal meta-analysis or systematic reviews with some quantitative results. Details can be found in the methodology section of the WIKI.[\[2\]](#)

| Reference | Population | Scale | Num. papers | Intervention | Comparator | Metric | Conclusion | Quality score |
|--|---|--------|-------------|--------------|-------------------------|---------------------|--|---------------|
| Chen, D; Wei, W; Chen, LD 2020 | Cropland in China | China | 84 | Terraces | Slopes without terraces | Soil moisture | The results indicated that terracing has improved soil moisture content in China. The responses of soil moisture to terracing vary from different terracing land uses. | 62% |
| Wei, W; Chen, D; Wang, LX; Daryanto, S; Chen, LD; Yu, Y; Lu, YL; Sun, G; Feng, TJ 2016 | Human-made terraces world wide (including crops of rice, grain, coffee, potato, viticulture or ancient cultivation) | Global | 300 | Terraces | No terraces | Soil water recharge | This global synthesis suggested that diverse terracing practices played a positive role in ecosystem services provisions, particularly soil water recharge. <i>Reviewers' note: We labelled the results as uncertain due to the lack of statistical testing.</i> | 44% |

3. KNOWLEDGE GAPS

The authors did not report knowledge gaps in the reviewed synthesis papers.