

# SINGLE-IMPACT FICHE

## INTERCROPPING

### IMPACT: SOIL WATER RETENTION

Data extracted in May 2021

**Note to the reader:** This fiche summarises the impact of intercropping on SOIL WATER RETENTION. It is based on 1 peer-reviewed synthesis research paper<sup>1</sup>, including 180 individual studies.

## 1. WEIGHT OF THE EVIDENCE

- **CONSISTENCY OF THE IMPACT:**

Intercropping of multiple crop species (i.e., crop mixture cropping) has contrasting effects on soil water retention compared to monoculture. The one reviewed synthesis paper reported available water to increase in the top soil, but to decrease in deep soil layers in response to intercropping (see **Table 1**).

The one reviewed synthesis paper did not include data collected in Europe (see **Table 1 and 2**).

**Table 1.** Summary of effects. The numbers between parenthesis 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	All studies				Only studies including EU			
		Positive	Negative	No effect	Uncertain	Positive	Negative	No effect	Uncertain
Increase Soil water retention	Crop mixture	1 (1)	1 (1)	0	0	0	0	0	0

**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 summarized 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.

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<sup>1</sup> 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.

**Table 2.** Main characteristics of the synthesis papers reporting impacts of intercropping on soil water retention.

Reference	Population	Geographical scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Daryanto, S; Fu, BJ; Zhao, WW; Wang, S; Jacinthe, PA; Wang, LX 2020	Grain legumes and cereals	Africa	180	Grain legume and cereal intercropping	pure stand	Soil available water	Intercropping can increase shallow soil moisture but decrease deep soil moisture.	62%

### 3. KNOWLEDGE GAPS

<b>Authors of this synthesis</b>	Lack of studies in Europe.
<b>Daryanto et al., 2020</b>	Studies that focus on indigenous African grain legumes or cereals should be encouraged because, with the exception of cowpea and teff, most past studies have focused on non-native species.