SINGLE-IMPACT FICHE
INTERCROPPING

IMPACT: CARBON SEQUESTRATION

Data extracted in May 2021

Note to the reader: This fiche summarises the impact of intercropping on CARBON SEQUESTRATION. It is based on 1 peer-reviewed synthesis research paper[1], including 180 individual studies.

1. WEIGHT OF THE EVIDENCE

- CONSISTENCY OF THE IMPACT:
  Intercropping of multiple crop species (i.e., crop mixture cropping) has a positive effect on carbon sequestration compared to monoculture. The one reviewed synthesis paper reported an increase in soil organic carbon in response to intercropping (see **Table 1**).

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

		All studies				Only studies including EU			
Impact	**Intervention**	**Positive**	**Negative**	**No effect**	**Uncertain**	**Positive**	**Negative**	**No effect**	**Uncertain**
Increase Carbon sequestration	Crop mixture	1 (1)	0	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 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.

Table 2. Main characteristics of the synthesis papers reporting impacts of intercropping on carbon sequestration.

Reference	Population	Geographical scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Daryanto, S; Fu, BJ; Zhao, WW; Wang, S; Jacinthe, PA; Wang, LX	Grain legumes	Africa	180	Grain legume and cereal	Monoculture	Soil organic	Intercropping increased carbon	62%

[1] 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.

Reference	Population	Geographical scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
2020	and cereals			intercropping		carbon	sequestration by 15%	

3. KNOWLEDGE GAPS

Authors of this synthesis	Lack of studies in Europe.
Daryanto et al., 2020	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.