

SINGLE-IMPACT FICHE

FALLOWING



IMPACT: SOIL ORGANIC CARBON

Data extracted in April 2021

Note to the reader: This fiche summarises the impact of fallowing on SOIL ORGANIC CARBON. It is based on 1 peer-reviewed synthesis research paper¹, including 65 individual studies.

1. WEIGHT OF THE EVIDENCE

- **CONSISTENCY OF THE IMPACT:**
Natural fallow² has no effect on soil organic carbon compared to cultivated arable land, according to the only synthesis paper reviewed (see **Table 1**).

The reviewed synthesis paper includes data collected in Europe (see **Table 2**).

Table 1. Summary of effects. The effect with the higher score is marked in bold and the cell coloured. 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	Comparator	Positive	Negative	No effect	Uncertain
Increase soil organic carbon	Natural fallow	Cultivated arable land	0	0	1 (1)	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 this document [→](#).*

As shown in the "Quality score" in **Table 2**, the quality level of the only synthesis paper retrieved was 56%. This synthesis paper did not report any of the following criteria: "Selection criteria", "Search databases", "Search string", "Number of studies at each step", "Individual effect sizes", "Individual studies weighted", and "Dataset available".

2. IMPACTS

The main characteristics and results of the synthesis paper are summarized in **Table 2**. Detailed results of this synthesis study are reported in the summary reports [→](#).

Table 2. Main characteristics of the synthesis paper reporting impacts of fallowing on GHG emissions.

¹ Research synthesis papers include a formal meta-analysis or systematic reviews with some quantitative results.

² Natural fallows are fallows with bare land bearing no crops at all or land with spontaneous natural growth, which may be used as feed or ploughed in.

Reference	Population	Scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Kaempf, I; Hoelzel, N; Stoerrle, M; Broll, G; Kiehl, K 2016	Mineral soils from the temperate zone	Global	65	Arable land recently abandoned (0-4 years)	Arable land	Soil organic carbon (SOC) sequestration	SOC sequestration in recently (0-4 years) abandoned arable lands was not significantly higher than in arable lands.	56%

3. KNOWLEDGE GAPS

The synthesis paper did not indicate relevant knowledge gaps.

4. SYSTEMATIC REVIEW SEARCH STRATEGY

Keywords	<p>TS= (("fallow*" OR "uncrop*" OR "non-crop*" OR "unplant*" OR "unplow*" OR "uncultiv*" OR "non-cultiv*" OR "non-pasture*" OR "ungraz*") OR (("non-productive" OR "abandon*" OR "bare*" OR "unmanage*" OR "extensiv*" OR "extensificat*" OR "desintensificat*" OR "rotation" OR "set-aside" OR "set* aside") NEAR/3 (land* OR crop* OR soil* OR field*))) AND TS= ("meta-analy*" OR "systematic* review*" OR "evidence map" OR "global synthesis" OR "evidence synthesis" OR "research synthesis") AND TS= (agricultur*)</p> <p>or</p> <p>TITLE-ABS-KEY (("fallow*" OR "uncrop*" OR "non-crop*" OR "unplant*" OR "unplow*" OR "uncultiv*" OR "non-cultiv*" OR "non-pasture*" OR "ungraz*") OR (("non-productive" OR "abandon*" OR "bare*" OR "unmanage*" OR "extensiv*" OR "extensificat*" OR "desintensificat*" OR "rotation" OR "set-aside" OR "set* aside") W/3 (land* OR crop* OR soil* OR field*))) AND ("meta-analy*" OR "systematic* review*" OR "evidence map" OR "global synthesis" OR "evidence synthesis" OR "research synthesis") AND (agricultur*)</p>
Search dates	No time restrictions
Databases	Web of Science and Scopus, run in February 2021
Selection criteria	<p>The main criteria that led to the exclusion of a synthesis paper were if the paper: (1) was out of the scope; (2) the duration of the fallowing was not as defined in the general fiche (we excluded fallow periods shorter than one crop year, or arable land taken out of production for more than 5-6 years); (3) dealt with shifting agriculture (practice usually conducted in tropical forest-agriculture where land is abandoned after cultivation for the regeneration of secondary forests); (4) the effect of fallowing was explored in combination with other practices (e.g. conservation agriculture) and it was not possible to disentangle the sole effect of fallowing; (5) was not a meta-analysis; (6) was not written in English. Synthesis papers that passed the relevance criteria were subject to critical appraisal carried out on paper-by-paper basis.</p> <p>The search returned 236 synthesis papers potentially relevant for the practice object of our fiche. From the 236 potentially relevant synthesis papers, 100 were excluded after reading the title and</p>

	abstract, and 132 after reading the full text according to the above-mentioned criteria. Finally, 4 synthesis papers were selected for following, from which 1 was relevant for this impact.
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