

SINGLE-IMPACT FICHE

FALLOWING



IMPACT: CROP YIELD

Data extracted in April 2021

Note to the reader: This fiche summarises the impact of fallowing on CROP YIELD. It is based on 1 peer-reviewed synthesis research paper¹, including 94 individual studies.

1. WEIGHT OF THE EVIDENCE

- CONSISTENCY OF THE IMPACT:

Fallowing has a differing effects on crop yield compared to cultivated arable lands, depending on the type of fallow land (see **Table 1**):

- In the case of natural fallow², the only synthesis paper reviewed reported one positive and one no effect in maize yield grown after fallowing, depending on whether crops were fertilised and no fertilised, respectively.
- In the case of green fallow³, the synthesis paper reported a positive effect on maize crop yield after fallowing.

The reviewed synthesis paper does not include 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. The synthesis paper reported for both natural and green fallow and more than one effect for natural fallow.

Impact	Intervention	Comparator	Positive	Negative	No effect	Uncertain
Increase crop yield	Natural fallow	Cultivated arable land	1 (1)	0	1 (1)	0
	Green fallow		1 (1)	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 this document [→](#).*

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.

³ Green fallows are fallows of land sown exclusively for the production of green manure.

As shown in the “Quality score” in **Table 2**, the quality level of the only synthesis paper retrieved was 75%. This synthesis paper did not report any of the following criteria: “Search databases”, “Search string”, “Number of studies at each step” 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 crop yield.

Reference	Population	Scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Sileshi, G; Akinnifesi, FK; Ajayi, OC; Place, F 2008	Maize crops in Africa	Africa	94	1) Natural fallow; 2) Improved fallow (legume herbaceous species); 3) Improved fallow (legume coppicing species); 4) Improved fallow (legume non-coppicing species)	Continuously cropped unfertilized maize monoculture	Crop yield	The global maize yield response to improved fallows with legume species is significantly positive and higher than unfertilized maize and natural vegetation fallows	75%

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