

SINGLE-IMPACT FICHE

FALLOWING



IMPACT: BIODIVERSITY

Data extracted in April 2021

Note to the reader: This fiche summarises the impact of fallowing on BIODIVERSITY. It is based on 2 peer-reviewed synthesis research papers¹, including 35 and 127 individual studies.

1. WEIGHT OF THE EVIDENCE

- CONSISTENCY OF THE IMPACT:

Natural fallows² have a positive effect on biodiversity (i.e. increase of biodiversity) compared to cultivated arable land, according to 1 synthesis paper reviewed that included data from Europe, while another synthesis paper reported no net effect on biodiversity after rice fields abandonment in Japan because some species benefit while others, particularly wetland species, are prone to be negatively affected (see **Table 1**).

From the 2 reviewed synthesis papers, 1 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 Biodiversity	Natural fallow	Cultivated arable land	1 (1)	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 ranges from 56% to 100%. One synthesis paper did not report any of the following criteria: "List of studies", "Search string", "Number of studies at each step", "Individual effect sizes" and "Dataset available".

2. IMPACTS

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

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.

Table 2. Main characteristics of the synthesis papers reporting impacts of fallowing on biodiversity. The references are ordered chronologically with the most recent publication date first.

Reference	Population	Scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Koshida, C; Katayama, N 2018	Fallow or recently abandoned rice fields in Japan	Japan	35	Fallow or recently abandoned field	Cultivated field (tilled, flood irrigated, rice planted, and harvested every year)	Species richness and abundance (plants, invertebrates, amphibians, fishes birds and mammals)	Fallow fields supported an equal level of biodiversity than cultivated rice fields. These results suggest rewilding will not necessarily be achieved by rice-field abandonment. Moreover, wetland species are particularly prone to being negatively affected by abandonment.	100%
Van Buskirk, J; Willi, Y 2004	Set-aside lands in Europe and North America	Europe and North America	127	Set-aside land (<6yrs)	Conventional agriculture	Bird species richness; birds population density; plants population density; spiders population density	Land withdrawn from conventional production unequivocally enhances biodiversity in North America and Europe.	56%

3. KNOWLEDGE GAPS

The synthesis papers 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 2 were relevant for this impact.</p>