

IMPACT: GRASSLAND PRODUCTION

Data extracted in May 2022
Fiche created in December 2023

Note to the reader: This fiche summarises the effects of Landscape features on GRASSLAND PRODUCTION. It is based on 1 synthesis paper¹ containing 83 primary studies.

1. WEIGHT OF THE EVIDENCE

CONSISTENCY OF THE IMPACT

The evidence available on the effect of landscape features on grassland production is not statistically tested.

The table below shows the number of synthesis papers with statistical tests reporting i) a significant difference between the Intervention and the Comparator, that is to say, a significant statistical effect, which can be positive or negative; or ii) a non-statistically significant difference between the Intervention and the Comparator. In addition, we include, if any, the number of synthesis papers reporting relevant results but without statistical test of the effects. Details on the quality assessment of the synthesis papers can be found in the methodology section of this WIKI.

- The effect of hedgerows on grassland production compared to grasslands without hedgerows was studied in 1 synthesis paper where authors report relevant results, but this evidence is not statistically tested.

The selected synthesis paper included studies conducted in Europe (see **Table 2**).

Table 1: Summary of effects. Number of synthesis papers reporting positive, negative or non-statistically significant effects on environmental and climate impacts. The number of synthesis papers reporting relevant results but without statistical test of the effects are also provided. When not all the synthesis papers reporting an effect are of high quality, the number of synthesis papers with a quality score of at least 50% is indicated in parentheses. The reference numbers of the synthesis papers reporting each of the effects are provided in **Table 3**.

Impact	Metric	Intervention	Comparator	Statistically tested			Non-statistically tested
				Significantly positive	Significantly negative	Non-significant	
Increase grassland production	Grassland production	Hedgerows	No hedgerows	0	0	0	1 (0)

QUALITY OF THE SYNTHESIS PAPERS

The quality of each synthesis paper was assessed based on 16 criteria regarding three main aspects: 1) the literature search strategy and primary studies selection; 2) the statistical analysis conducted; and 3) the evaluation of potential bias. We assessed whether authors addressed and reported these criteria. Then, a quality score was calculated as the percentage of these 16 criteria properly addressed and reported in each synthesis paper. Details on quality criteria can be found in the methodology section of this WIKI.

2. IMPACTS

The main characteristics and results of the 1 synthesis paper is reported in **Table 2** with the terminology used in those papers, while **Table 3** shows the reference numbers of the synthesis papers reporting for each of the results shown in **Table 1**. Comprehensive 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, are provided in the **summaries of the synthesis papers** available in this WIKI.

Table 2: Main characteristics of the synthesis paper reporting effects on grassland production.

Reference number	Population	Scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Ref8	Grazed dairy systems	Global	83	Shelterbelts	Grazed dairy pasture without trees	Pasture production and quality	Variable results for the pasture production services provided by on-farm woody systems, with all causal relationships having low confidence. Reviewers' note: We labelled the results as uncertain due to the lack of statistical testing.	38%

Table 3: Reference numbers of the synthesis papers reporting for each of the results shown in **Table 1**.

	Statistically tested			Non-statistically tested
	Significantly positive	Significantly negative	Non-significant	

¹ Synthesis research papers include either meta-analysis or systematic reviews with quantitative results. Details can be found in the methodology section of the WIKI.

Impact	Metric	Intervention	Comparator	Significantly positive	Significantly negative	Non-significant	
Increase grassland production	Grassland production	Hedgerows	No hedgerows				Ref8

3. FACTORS INFLUENCING THE EFFECTS ON GRASSLAND PRODUCTION

No factors were found.

4. KNOWLEDGE GAPS

Table 5: Knowledge gap(s) reported by the authors of the synthesis papers included in this review.

Ref Num	Gap
Ref8	The number of publications supporting a given relationship between on-farm woody systems and ecosystem services was often relatively low.

5. SYNTHESIS PAPERS INCLUDED IN THE REVIEW

Table 6: List of synthesis papers included in this review. More details can be found in the summaries of the meta-analyses.

Ref Num	Author(s)	Year	Title	Journal	DOI
Ref8	England, JR; OGrady, AP; Fleming, A; Marais, Z; Mendham, D	2020	Trees on farms to support natural capital: An evidence-based review for grazed dairy systems	SCIENCE OF THE TOTAL ENVIRONMENT, 704, 135345.	10.1016/j.scitotenv.2019.135345

Disclaimer: These fiches present a large amount of scientific knowledge synthesised to assess farming practices impacts on the environment, climate and productivity. The European Commission maintains this WIKI to enhance public access to information about its initiatives. Our goal is to keep this information timely and accurate. If errors are brought to our attention, we will try to correct them. However, the Commission accepts no responsibility or liability whatsoever with regard to the information on these fiches and WIKI.
