

# SINGLE-IMPACT FICHE

## SOIL AMENDMENT WITH LIME OR GYPSUM



### IMPACT: SOIL BIOLOGICAL QUALITY

Data extracted in April 2021

**Note to the reader:** This fiche summarises the impact of soil amendment with lime or gypsum application on soil biological quality. It is based on 1 peer-reviewed synthesis research paper including 19 individual studies.

#### 1. WEIGHT OF THE EVIDENCE

- CONSISTENCY OF THE IMPACT:

Soil amendment with gypsum, compared to no amendment, showed a positive effect on soil biological quality in the only synthesis paper reviewed. No results were available for liming (see **Table 1**).

The reviewed synthesis paper did not include data collected in Europe (it was focused on China).

**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	Control	Positive	Negative	No effect	Uncertain
Improve soil biological quality	Gypsum	No gypsum	<b>1 (1)</b>	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 [→](#).*

As shown in the "Quality score" in **Table 2**, the quality level is 62%.

#### 2. IMPACTS

The main characteristics and results of the synthesis paper are summarized in **Table 2**. Detailed results of each synthesis study are reported in the summary reports .

**Table 2.** Main characteristics of the synthesis paper reporting impacts of soil amendment with lime or gypsum on soil biological quality.

Reference	Population	Geographical scale	Num. papers	Intervention	Comparator	Metric	Conclusion	Quality score
Wang Y, Wang Z, Liang F, Jing X, Feng W 2021	Saline-sodic soil types	China	59	Soil amendment with flue gas desulfurization gypsum (FGDG)	No amendment control under identical experimental conditions	Soil bacteria, fungi, actinomycetes	Soil amendment with flue gas desulfurization gypsum significantly increased the numbers of soil bacteria, fungi, and actinomycetes.	62%

### 3. KNOWLEDGE GAPS

No gap reported.

### 4. SYSTEMATIC REVIEW SEARCH STRATEGY

<b>Keywords</b>	<p>Search equations WOS <i>TOPIC: ("liming" OR "limest*" OR "chalk*" OR "marl*" OR "gypsum") AND TOPIC: (soil) AND TOPIC: ("meta-analy*" OR "systematic* review*" OR "evidence map" OR "global synthesis" OR "evidence synthesis" OR "research synthesis")</i></p> <p>Search equations SCOPUS <i>TITLE-ABS-KEY ( ( "liming" OR "limest*" OR "chalk*" OR "marl*" OR "gypsum" ) ) AND TITLE-ABS-KEY ( soil ) AND TITLE-ABS-KEY ( ( "meta-analy*" OR "systematic* review*" OR "evidence map" OR "global synthesis" OR "evidence synthesis" OR "research synthesis" ) )</i></p>
<b>Search dates</b>	<p>No time restrictions</p>
<b>Databases</b>	<p>Web of Science and Scopus, run in March 2021</p>
<b>Selection criteria</b>	<p>The main criteria that led to the exclusion of a synthesis paper were if the paper: (1) was out of the scope; (2) was not a meta-analysis; (3) was a MA of experimental trials (i.e. no systematic review process); (4) did not deal with soil amendment with lime or gypsum; (5) did not deal with environmental or productivity outcome; (6) did not clearly stated the intervention and comparator treatments; (7) 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 systematic search provided 35 synthesis papers (after removing the duplicates) potentially relevant for the practice object of our fiches. From this set of potentially relevant synthesis papers, 7 synthesis papers were selected, among which 1 was relevant for the impact considered in this fiche.</p>