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Extreme Weather Events in Agriculture: A Systematic Review

Alessia Cogato, Franco Meggio, Massimiliano De Antoni Migliorati, Francesco Marinello

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Abstract

Despite the increase of publications focusing on the consequences of extreme weather events (EWE) for the agricultural sector, a specific review of EWE related to agriculture is missing. This work aimed at assessing the interrelation between EWE and agriculture through a systematic quantitative review of current scientific literature. The review analysed 19 major cropping systems (cereals, legumes, viticulture, horticulture and pastures) across five continents. Documents were extracted from the Scopus database and examined with a text mining tool to appraise the trend of publications across the years, the specific EWE-related issues examined and the research gaps addressed. The results highlighted that food security and economic losses due to the EWE represent a major interest of the scientific community. Implementation of remote sensing and imagery techniques for monitoring and detecting the effects of EWE is still underdeveloped. Large research gaps still lie in the areas concerning the effects of EWE on major cash crops (grapevine and tomato) and the agronomic dynamics of EWE in developing countries. Current knowledge on the physiological dynamics regulating the responses of main crops to EWE appears to be well established, while more research is urgently needed in the fields of mitigation measures and governance systems.

Keywords: extreme weather events, agriculture, food security, economic losses, remote sensing monitoring, viti

Full text

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