Artificial intelligence for crop yield prediction: a bibliometric analysis

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The synergy between artificial intelligence (AI) and agricultural sciences has garnered substantial attention, especially in the realm of crop yield prediction. The present bibliometric analysis examines the worldwide research trends about the application of AI in predicting crop yields. The global literature on crop yield prediction using AI published between 1997 and 2022 is searched in the Scopus database. Five hundred and forty research articles were used to compile the analysis; they were located in the Scopus database and processed through the VOSviewer. Our research reveals a significant surge in scholarly publications, particularly focusing on countries including China, the United States, India and Canada. These research endeavours aim to apply AI methodologies for forecasting agricultural produce yields in tandem with developments in remote sensing technologies that facilitate more accurate yield predictions. These insights offer a valuable reference for researchers and illuminate potential directions for future investigations in the domain of AI-based crop yield prediction.

Keywords: Artificial intelligence, bibliometric analysis, crop yield prediction, deep learning, machine learning, remote sensing, VOSviewer.

for many years. Prediction of crop yield has become an increasingly scrutinized research area within the realm of agricultural AI. Artificial intelligence can examine the enormous quantity of data from diverse sources, including satellite imagery, meteorological data and soil conditions, making it a highly effective tool for forecasting agricultural yields[2]. This capability enables more accurate and effective farming, thereby fostering sustainable agricultural practices and aiding in resolving worldwide food production issues. In general, the applicability of AI in the agricultural sector, specifically in predicting crop yields, signifies a substantial progression in the methods and administration of farming. This transition denotes a change towards agricultural methods that are more technologically advanced, environmentally conscious and sustainable. Such methods are vital for addressing the escalating worldwide need for food while safeguarding ecological resources.

Forecasting crop yield poses a considerable challenge in precision agriculture, leading to the development and validation of numerous models. This complex issue necessitates the utilization of multiple datasets due to the diverse factors influencing crop yield, including climate, weather, soil composition,