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| **Source Information** | **Research objective** | **Problem or gap addressed** | **Findings and conclusions** | **Limitations or Weakness** | **Implications** | **How your research can fill the gap** |

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| Fertilizer Recommendation and Crop Prediction Using Machine Learning.  Ankit Kumar, Priya Sharma, R. K. Singh | Create a scalable system with efficient data collection for diverse farming communities. | Existing methods lack accuracy in site-specific fertilizer recommendations. | Gradient Boosting Machine algorithm outperformed others in predicting optimal fertilizer application. | Limited by the quality and availability of input data; lacks real-time adaptability. | Incorporate real-time data and expand to diverse geographic regions. | Develop a dynamic model integrating real-time environmental data for broader applicability. |
| Crop and Fertilizer Recommendation Using Machine Learning.  S. Mehta, R. Verma, T. Gupta | To develop an AI-based system for precise fertilizer recommendations based on soil and weather data. | Generalized recommendations fail to address local soil and climate variations. | AI-driven model provides tailored fertilizer suggestions, enhancing crop yield. | Requires extensive, high-quality data; potential scalability issues. | Focus on data collection methods and scalability of AI models. | Create a scalable system with efficient data collection for diverse farming communities. |

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| Fertilizer Recommendation System Using Machine Learning.  V. Patel, A. Roy, M. Desai | To integrate IoT sensors with ML models for precise fertilizer application. | Traditional methods do not offer real-time, field-specific recommendation | IoT-ML integration allows for real-time monitoring and precise fertilizer application. | High implementation cost; reliance on continuous sensor data. | Explore cost-reduction strategies and sensor-free data alternatives. | Develop a cost-effective solution utilizing existing farmer resources |
| Optimizing Fertilizer Usage in Agriculture with AI-Driven Recommendation  J. Rao, P. Bansal, K. Iyer | To predict soil nutrient levels using deep learning for fertilizer recommendations. | Manual soil testing is time-consuming and not scalable | Deep learning models accurately predict soil nutrients, aiding in fertilizer planning. | Requires large, labelled datasets; may not generalize across different soil types. | Investigate transfer learning to apply models across various regions. | Implement adaptive learning models that require fewer labelled samples. |
| Can Machine Learning Models Provide Accurate Fertilizer Recommendation  H. Das, N. Prakash, S. Nair | To combine satellite imagery with ML models for fertilizer prediction. | Lack of ground-level data limits the accuracy of fertilizer recommendations | Satellite data enhances the spatial resolution of fertilizer recommendations | Dependent on satellite data quality; affected by weather conditions like cloud cover. | Develop methods to mitigate data quality issues and validate with ground data. | Integrate ground-based observations to complement satellite data for robust recommendations. |

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