

Submission Summary

Conference Name	5th International Conference on Cognitive & Intelligent Computing (ICCIC-2025)
Paper ID	431
Paper Title	A Machine Learning-Based Decision Support System for Precision Crop Recommendation in Smart City Urban Agriculture
Abstract	<p>The rapid pace of urbanization catalyzed by the Smart City became an attractive opportunity and highlighted the critical flaws in traditional food supply chains, making Urban Agriculture (UA) a truly urgent strategy for urban food security. However, significant knowledge deficits arise within urban non-expert farmers, resulting in challenges to blanket adoption, despite its potential benefits. This work presents a data-driven Decision Support System (DSS) that explicitly aims to address the knowledge gap by providing high-accuracy crop recommendations with precision. The DSS is built on a dataset of 2200 data instances and uses seven agronomic features, soil Nitrogen (N), Phosphorus (P), Potassium (K) levels, temperature, humidity, pH, and rainfall. After extensive comparative analysis between multiple supervised ML classifiers, the most responsive model for this classification task was identified, with the Gaussian Naïve Bayes model achieving the best performance with 99% accuracy. The high-accuracy prediction model serves as the primary input for the accessible DSS. The DSS presents an opportunity for urban farmers to utilize data-driven predictive algorithms to transform crop selection and resource efficiencies, enhancing UA's profitability. This work is a tangible step toward creating secure, resilient smart cities aligned with UN Sustainable Development Goals 11.</p>
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Submission Files	smartcities_finalpaper.pdf (651.8 Kb, 4/11/2025, 7:49:23 pm)
Submission Questions Response	<p>1. Paper Title <i>Enter the full title of your paper.</i></p> <p>A Machine Learning-Based Decision Support System for Precision Crop Recommendation in Smart City Urban Agriculture</p> <p>2. Abstract: <i>Provide a concise abstract (150–250 words) summarizing the contribution of your paper.</i></p> <p>The rapid pace of urbanization catalyzed by the Smart City became an attractive opportunity and highlighted the critical flaws in traditional food supply chains, making Urban Agriculture (UA) a truly urgent strategy for urban food security. However, significant knowledge deficits arise within urban non-expert farmers, resulting in challenges to blanket adoption, despite its potential benefits. This work presents a data-driven Decision Support System (DSS) that explicitly aims to address the know</p> <p>3. Keywords: <i>List 4–6 keywords that best describe your paper.</i></p> <p>Smart Cities, Urban Agriculture (UA), Food Security, Machine Learning (ML), Crop Recommendation, Precision Agriculture</p>

4. Corresponding Author Name and Email:

Specify who will be the primary point of contact for the conference committee.

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