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Smart Seed Quality Evaluation Using Machine Learning Technique

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Abstract: *Seed quality testing plays a pivotal role in modern agriculture by ensuring the viability and performance of seeds, which are the foundation of crop production. This abstract provides an overview of the Seed Quality Tester, a crucial tool in the agricultural sector. The Seed Quality Tester is a multifaceted device designed to assess various parameters of seed quality, including germination rate, moisture content, purity, and vigor. This tool employs a combination of cutting-edge technologies such as image analysis, electronic sensors, and data analytics to provide accurate and rapid assessments. This abstract delves into the primary features and functionalities of the Seed Quality Tester. It discusses the significance of germination rate as a key determinant of seed quality, detailing the methods employed to measure it. Additionally, the tool's ability to assess seed moisture content is highlighted, underscoring its importance in seed preservation and storage. The purity analysis function is explored, showcasing how the Seed Quality Tester can identify and eliminate impurities, ensuring the planting of high-quality seeds. Vigor testing, a critical aspect of seed quality assessment, is explained, emphasizing its role in predicting the potential for robust seedling establishment. The Seed Quality Tester's use of advanced technology to perform these tests is described, emphasizing its efficiency and reliability. Furthermore, this abstract address the impact of the Seed Quality Tester on the agriculture industry, as it not only contributes to increased crop yields and improved food security but also supports sustainable farming practices by optimizing resource utilization.*

Keywords: Seeds, Quality, CNN (Convolutional Neural Network), SVM (Support Vector Machine), Parameters