

OPTIMIZATION OF SWEET CORN PRODUCTION USING ARTIFICIAL INTELLIGENCE

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Abstract. *The integration of artificial intelligence (AI) technologies in sweet corn cultivation (*Zea mays saccharata*) holds significant potential for enhancing production efficiency and resource management. This study explores the application of AI in various agricultural processes, including the use of computer vision and multispectral imaging for continuous crop monitoring, machine learning algorithms for yield prediction, precision agriculture for resource optimization, and autonomous systems to increase operational efficiency. The results demonstrate that AI enables early detection of crop stress, diseases, and pests, facilitating targeted interventions that improve crop quality and reduce costs. Moreover, AI-driven predictive analytics help mitigate climate-related risks, while decision support systems provide customized recommendations for optimizing agricultural practices. The widespread adoption of AI in sweet corn cultivation represents a strategic opportunity to increase the sustainability and competitiveness of this sector.*

Keywords: artificial intelligence, sweet corn, precision agriculture, crop monitoring, yield prediction.

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1. Introduction

Agricultural production is one of the essential economic sectors globally, playing a crucial role in ensuring food security. In this context, sweet corn (*Zea mays saccharata*) represents a crop of significant interest, both due to its nutritional value and the growing demand in the food product market. Given demographic trends and the need to meet increasingly high consumer demands, optimizing sweet corn production has become a strategic priority for both farmers and researchers.

In traditional sweet corn production, farmers face multiple challenges. Unpredictable climatic factors, the necessity for efficient resource management (such as water, fertilizers, and pesticides), and pest and disease control are just some of the variables that can negatively impact yield and crop quality.

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