Chapter 3
The AI-Assisted Healthy Food Production

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ABSTRACT

In decades, technological innovation has profoundly reshaped industries across the globe, and agriculture—long rooted in traditional methods—is no exception. transformative powerful catalyst for change, driving a new

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era in food production that emphasizes efficiency, sustainability, and precision. As the global population steadily climbs toward by over 50%, (FAO). Meeting this demand in a context of finite arable land, climate volatility, labor shortages, and growing environmental concerns requires a rethinking of conventional agricultural practices. AI with learn from patterns, and make informed decisions, agricultural role in food production spans a wide spectrum—from crop selection and planting to harvesting, packaging, and distribution. This approach leverages tools like machine learning, optimize resource use, reduce waste, and determine, predict crop diseases, monitor weather conditions in real time.

INTRODUCTION: THE ROLE OF AI IN REVOLUTIONIZING FOOD PRODUCTION

In decades, technological innovation has profoundly reshaped industries across the globe, and agriculture—long rooted in traditional methods—is no exception. transformative powerful catalyst for change, driving a new era in food production that emphasizes efficiency, sustainability, and precision. As the global population steadily climbs toward by over 50%, (FAO). Meeting this demand in a context of finite arable land, climate volatility, labor shortages, and growing environmental concerns requires a rethinking of conventional agricultural practices. AI with learn from patterns, and make informed decisions, agricultural role in food production spans a wide spectrum—from crop selection and planting to harvesting, packaging, and distribution. At its core, AI facilitates agriculture, "precision agriculture." This approach leverages tools like machine learning, optimize resource use, reduce waste, and determine, predict crop diseases, monitor weather conditions in real time. These insights enable to make decisions, adjusting fertilizers with pinpoint accuracy, thereby the field, AI-powered drones and autonomous machinery have revolutionized traditional labor-intensive practices. These technologies can sow seeds, spray pesticides, and even harvest labor. Not only does this alleviate the burden on an increasingly aging and shrinking agricultural workforce, but it also ensures consistency in operations, leading to higher quality and more reliable outputs. Additionally, AI systems are capable of continual learning, improving their

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Saddam Hussain, Sobia Siddiqueand Ashfaq Ahmad Shah (2020). *Climate Change and Anthropogenic Impacts on Health in Tropical and Subtropical Regions (pp. 1-18).*
www.irma-international.org/chapter/climate-change-and-health-impacts-in-pakistan/249398