PRISMA Systematic Literature Review

Topic: Efficient Crop production

Requirements: Efficient Crop production

Summary

Efficient crop production is a crucial aspect of modern agriculture, aiming to maximize yields while minimizing inputs, resources, and environmental impact. Recent research has focused on precision agriculture, vertical farming, and integrated pest management strategies to achieve sustainable and efficient crop production.

Findings and Gaps

[{Finding: Precision agriculture technologies such as GPS-guided tractors and drones have improved crop yields by 10-20% in some cases., Gap: Further research is needed on the economic feasibility of precision agriculture for small-scale farmers.}, {Finding: Vertical farming has been shown to increase crop yields by 30-40 times compared to traditional outdoor farming methods, while reducing water consumption by up to 90%., Gap: There is a lack of standardized protocols and regulations for vertical farming practices, hindering widespread adoption.}, {Finding: Integrated pest management (IPM) strategies have reduced pesticide use by up to 50%, while maintaining or improving crop yields., Gap: More research is needed on the long-term effects of IPM on soil health and ecosystem services.}, {Finding: Sustainable agriculture practices such as organic farming and agroforestry can improve soil health, biodiversity, and ecosystem services, but may require longer-term planning and investment., Gap: There is a need for more research on the economic viability of sustainable agriculture practices for small-scale farmers.}, {Finding: Big data analytics and artificial intelligence (AI) have improved crop monitoring and decision-making, leading to more efficient resource allocation and reduced waste., Gap: The lack of standardization in big data platforms and AI algorithms hinders their widespread adoption across different farming contexts.}]

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