



# Precision Agriculture Adoption in Ethiopian Highlands: Economic and Environmental Impacts

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## Abstract

Precision agriculture techniques have been introduced in various regions to enhance productivity and sustainability. A mixed methods approach was employed, combining survey data from 150 randomly selected farmers with semi-structured interviews to explore their experiences and perceptions of precision agriculture. The findings indicate that farmers who adopted precision agriculture techniques saw a significant increase in crop yields by up to 25% compared to those who did not adopt these methods, reflecting the effectiveness of precision farming in enhancing agricultural productivity. Precision agriculture adoption led to notable improvements in both economic and environmental outcomes for farmers in the Ethiopian Highlands. Policy makers should encourage further research into the long-term sustainability impacts of precision agriculture while providing financial incentives for farmers adopting these technologies.

**Keywords:** *Ethiopia, Highlands, Precision Farming, Mixed Methods, Sustainability, GIS, Participatory Action Research*

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