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Performance Evaluation of Urban Vegetable Production in Kashmir: A Statistical Analysis from the Narkara Cluster

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Abstract: ***Urban and peri-urban agriculture is gaining importance as a tool for achieving food security, employment, and sustainable development. This study evaluates the key determinants of vegetable production performance in the Narkara vegetable cluster on the outskirts of Srinagar city, Jammu & Kashmir. Utilizing primary data from 60 growers, a multiple linear regression model was employed to examine how land area, fertilizer use, plant protection expenses, and labor costs influence gross returns. The findings underscore the central role of landholding and labor input in driving productivity. The paper concludes with recommendations to optimize input efficiency and scale up urban agricultural potential in Kashmir.***
Keywords: Urban farming, Vegetable productivity, Regression analysis, Kashmir agriculture, Farm inputs, Performance metrics.

I. INTRODUCTION

Urbanization is transforming agriculture by compressing available land and raising demand for fresh, local food. In the Kashmir Valley, urban vegetable clusters like Narkara offer a sustainable model of intensive horticulture that supplements the region's food basket. Yet, disparities in productivity remain, driven by uneven resource allocation and lack of targeted agronomic support. This study addresses a pressing question: Which inputs most strongly affect vegetable production performance in urban clusters? To answer this, we apply a regression-based analysis to isolate the impact of major cost components and provide data-driven insights for policy and practice.

II. OBJECTIVES

1) To assess the resource use and production economics of vegetable growers in the Narkara cluster.
2) To statistically analyze the contribution of major inputs to farm income.
3) To identify key drivers for improving input efficiency and returns in urban farming systems.

III. METHODOLOGY

A. Study Area and Sampling

The study was conducted in the Narkara vegetable belt of Budgam district, which lies 7–9 km from Srinagar city. It includes the villages of Qazipora, Bunpora, Badamohalla, and Baghandar. A stratified random sample of 60 vegetable growers was surveyed, consisting of 58 smallholders (<1 ha) and 2 medium farmers (1–2 ha).

B. Data Collection

Primary data were gathered during the February–July 2019 vegetable growing season. Structured interviews captured information on:

- Land area under cultivation
- Expenditure on fertilizers and manures
- Cost of plant protection (pesticides, fungicides)
- Human labor input
- Gross income from vegetable sales

C. Analytical Framework

We employed a multiple linear regression model to quantify the effect of inputs on gross returns:

$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + U$

Where:

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- Y: Gross return per hectare (₹)
- X_1: Land area under cultivation (ha)
- X_2: Fertilizer and manure expenditure (₹/ha)
- X_3: Plant protection cost (₹/ha)
- X_4: Labor cost (₹/ha)
- U: Error term

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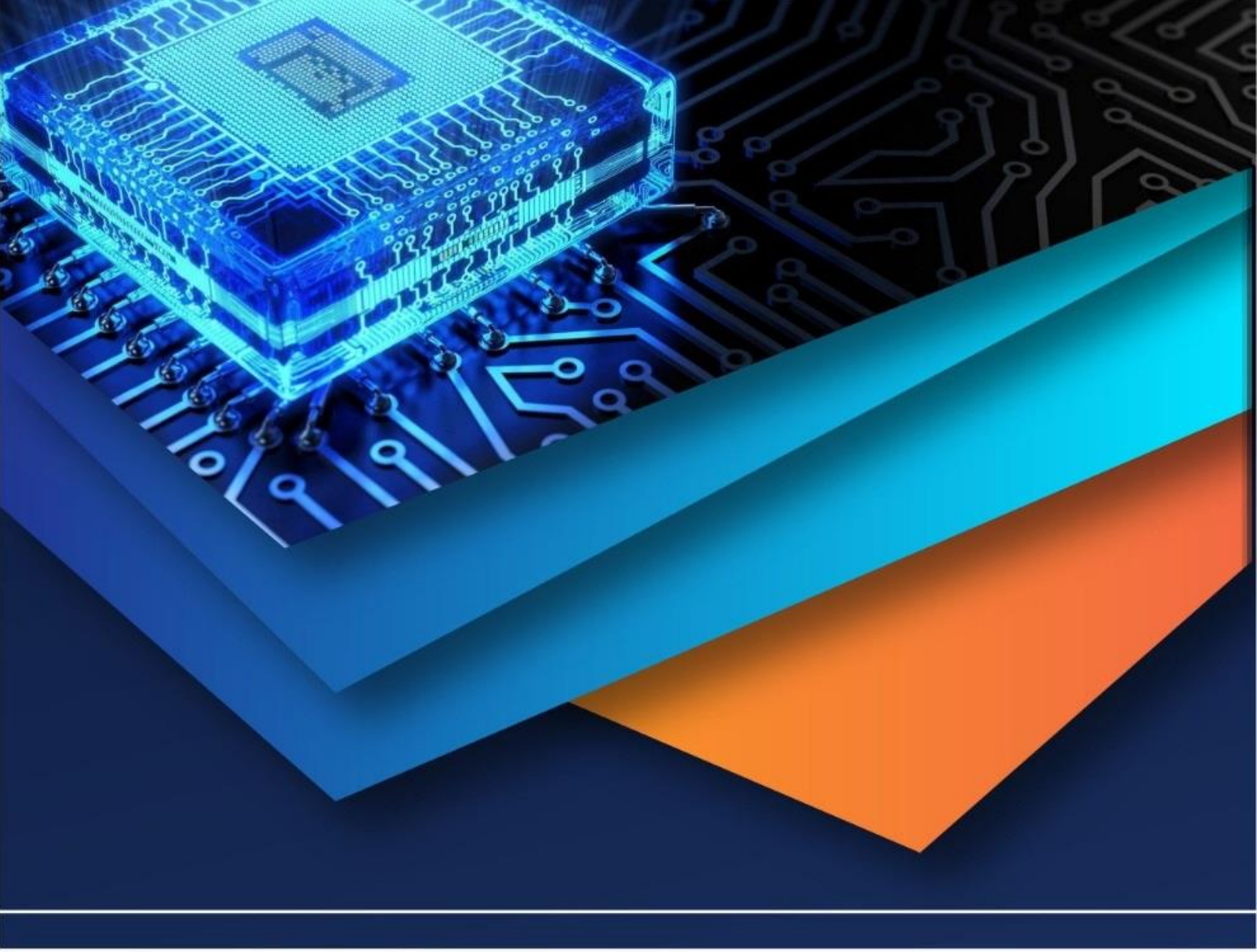

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