

IMPACT OF MINOR IRRIGATION ON MARKETABLE SURPLUS OF AGRICULTURAL PRODUCE: A STUDY OF SMALL AND MARGINAL MINORITY FARMERS IN DAVANGERE DISTRICT, KARNATAKA

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ABSTRACT

Agriculture is the primary source of livelihood in Davangere district, Karnataka, where irrigation plays a vital role in enhancing agricultural productivity and commercialization. This study examines the impact of minor irrigation facilities provided under the Ganga Kalyana Scheme of the Karnataka Minorities Development Corporation Limited on the marketable surplus of small and marginal farmers belonging to minority communities. The study is based on primary data collected from 200 farmers selected through simple random sampling from five villages of Davangere taluk, comprising 100 beneficiary (irrigated) and 100 non-beneficiary (unirrigated) farmers. Marketable surplus was estimated as the difference between total production and household consumption, and comparative percentage analysis was employed to assess the impact of irrigation across farm categories and crop groups. The findings reveal that irrigated farms generated a significantly higher marketable surplus (84.11%) than unirrigated farms (67.06%). Cash crops exhibited the highest level of commercialization in both farm categories, while irrigation substantially increased the marketable surplus of food crops, particularly among small farmers. The results indicate that access to minor irrigation improves agricultural productivity, encourages market-oriented production, and enhances farm income by increasing the volume of produce available for sale. The study rejects the null hypothesis and confirms a positive relationship between minor irrigation facilities and marketable surplus. It concludes that minor irrigation schemes such as the Ganga Kalyana Scheme contribute significantly to the socio-economic development of minority farming households. The study recommends expanding irrigation coverage, improving institutional credit, promoting crop diversification, and strengthening market linkages to achieve sustainable and inclusive agricultural development.

Keywords: Minor irrigation, Ganga Kalyana Scheme, marketable surplus, small and marginal farmers, agricultural commercialization, minority farmers, Davangere district, Karnataka.

1. INTRODUCTION

Agriculture remains the backbone of the rural economy in Davangere district. The district has approximately 65,002 hectares of cultivated land and is recognized as a prominent trading centre for agricultural commodities. Major crops grown include paddy, maize, pulses, cotton, groundnut, sunflower, chickpea and sugarcane. The presence of rice mills, sugar factories and other agro-processing industries further strengthens the agricultural economy of the region.

Irrigation is a strategic input in agricultural development. It enables farmers to adopt high yielding variety (HYV) seeds, fertilizers, pesticides and modern farming techniques. Timely irrigation stabilizes production, reduces risk, and improves productivity. However, major and medium irrigation projects are often capital intensive and not accessible to small and marginal farmers. In this context, minor irrigation schemes assume critical importance.

The Karnataka Minorities Development Corporation Limited implemented minor irrigation facilities under the Ganga Kalyana Scheme to support economically weaker small and marginal farmers belonging to religious minority communities such as Muslims Christians, Jain, Sikh and Parsis .This study evaluates the impact of such irrigation facilities on marketable surplus generation in the study area.

2. REVIEW OF LITERATURE

Previous studies have established that irrigation enhances cropping intensity, yield levels and farm income. Agricultural economists have emphasized that marketable surplus increases with improved productivity and commercialization. Studies on smallholder agriculture suggest that irrigation access reduces subsistence dependence and promotes market participation. However, limited empirical research exists focusing specifically on minority small and marginal farmers in Karnataka. This study attempts to bridge that gap.

3. OBJECTIVES OF THE STUDY

The study is undertaken with the following objectives:

1. To analyze crop-wise marketable surplus in irrigated and unirrigated areas.
2. To compare marketable surplus between small and marginal farmers.
3. To test the hypothesis that minor irrigation positively influences marketable surplus.

4. HYPOTHESIS

H0: There is no significant relationship between minor irrigation facility and marketable surplus.

H1: There is a positive relationship between minor irrigation facility and marketable surplus.

5. METHODOLOGY

5.1 Nature of Study

The study is based on a case study approach in Davangere taluk.

5.2 Sampling Design

A simple random sampling technique was adopted. Five villages were selected in Davanagere taluk viz..Kodaganuru, Kandanakovi, Anaberu, Attigeri and Kadajji.

Farmers were classified into:

- Marginal farmers
- Small farmers

The sample consisted of:

- 100 farmers with minor irrigation facility consisting 20 marginal and 80 small farmers.

- 100 farmers without irrigation facility consisting 40 and 60 marginal and small farmers respectively.

5.3 Data Collection

Primary data were collected through personal interviews using a pre-tested structured schedule. Secondary data were obtained from the District Statistical Office and official records of Karnataka Minorities Development Corporation regional Office.

5.4 Analytical Framework

Marketable surplus was computed using:

Marketable Surplus (MS) = Total Production (TP) – Household Consumption (HC)

Comparative percentage analysis was used to evaluate differences between irrigated and unirrigated farms.

6. RESULTS AND DISCUSSION

Table 1: Overall Production and Marketable Surplus (Quintals)

Particulars	Irrigated Area	Unirrigated Area
Total Production	12,650	2,155
Household Consumption	2,010	710
Marketable Surplus	10,640	1,445
Marketable Surplus (%)	84.11%	67.06%

The data clearly indicate that irrigated farms generate a substantially higher proportion of marketable surplus compared to unirrigated farms.

Table 2: Crop-wise Contribution to Marketable Surplus (%)

Crop Category	Irrigated Area (%)	Unirrigated Area (%)
Food Crops	35.43	37.37
Pulses	1.58	21.45
Cash Crops	71.38	41.17

Cash crops dominate marketable surplus in irrigated farms, while pulses show relatively higher contribution in unirrigated farms.

Table 3: Marketable Surplus of Food Crops by Size of Farmers (Quintals)

Category	Irrigated Production	Irrigated MS (%)	Unirrigated Production	Unirrigated MS (%)
Marginal Farmers	345	66.66%	510	67.46%
Small Farmers	4,406	87.97%	710	27.47%
Total	4,751	86.42%	1,220	44.26%

Small farmers in irrigated areas record significantly higher commercialization compared to their unirrigated counterparts.

Table 4: Marketable Surplus of Pulses by Size of Farmers (Quintals)

Category	Irrigated Production	Irrigated MS (%)	Unirrigated Production	Unirrigated MS (%)
Marginal Farmers	12	100.00%	41	85.37%
Small Farmers	167	98.80%	293	90.44%
Total	179	98.88%	334	89.82%

Pulses exhibit high commercialization in both areas, though irrigated farms show marginally higher surplus ratios.

Table 5: Marketable Surplus of Cash Crops by Size of Farmers (Quintals)

Category	Irrigated Production	Irrigated MS (%)	Unirrigated Production	Unirrigated MS (%)
Marginal Farmers	570	100.00%	100	100.00%
Small Farmers	7,050	99.65%	420	100.00%
Total	7,620	99.67%	520	100.00%

Cash crops are almost entirely market-oriented in both irrigated and unirrigated farms.

Table 6: Selected Crops – Marketable Surplus of Small Farmers (%)

Crop	Irrigated Area (%)	Unirrigated Area (%)
Jowar	43.09	7.90
Ragi	52.22	49.15
Maize	100.00	7.90
Cotton	99.24	100.00

The comparative analysis of selected crops demonstrates that irrigation significantly enhances the marketable surplus of food grains such as jowar and maize among small farmers.

7. HYPOTHESIS TESTING

The comparative analysis shows consistently higher production and surplus proportions in irrigated farms. The substantial difference (84.11% vs. 67.06%) supports rejection of the null hypothesis. Therefore, minor irrigation has a positive impact on marketable surplus.

8. POLICY IMPLICATIONS

The findings suggest the need for:

1. Expansion of minor irrigation coverage among vulnerable farmers.
2. Institutional credit support for irrigation infrastructure.
3. Promotion of crop diversification under assured irrigation.
4. Strengthening market access and value chains.
5. Adoption of sustainable water management practices.

CONCLUSION

The study demonstrates that minor irrigation significantly enhances agricultural production and marketable surplus among small and marginal minority farmers in Davangere district.

Irrigation promotes commercialization, particularly in food crops, and strengthens income generation. Minor irrigation schemes thus serve as effective instruments of inclusive agricultural development.

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