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INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881(Print); IMPACT FACTOR :10.16(2026); IC VALUE:5.16; ISI VALUE:2.286
Peer-Peer Reviewed, Refereed & Open Access International Journal - As per UGC Norms
(Fulfilled Suggests Parameters of UGC by IJMER)
Volume:15, Issue:6(1), June 2026
Scopus Review ID: A2B96D3ACF3FEA2A
Article Received: Reviewed: Accepted
Publisher: Sucharitha Publication, India
Online Copy of Article Publication Available: www.ijmer.in

COST OF CULTIVATION AND ECONOMIC EFFICIENCY AN EMPIRICAL STUDY

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Abstract

The present study examines the economic efficiency of major crops cultivated by farmers in Punnole village of Wardhannapet Mandal, Warangal District, Telangana. The study is based on primary data collected from 60 respondent farmers through a structured interview schedule. It analyzes the socio-economic characteristics of farmers, landholding patterns, sources of irrigation, cropping pattern, cost of cultivation, crop productivity, income and economic efficiency of major crops namely paddy, maize and cotton. The findings reveal that the majority of the respondents belong to the Backward Classes category and are concentrated in the economically active age group. Most farmers possess their own land, while rain-fed and bore-well irrigation are the major sources of water. Paddy and maize are the dominant crops cultivated in the village. The cost analysis indicates that labour is the major component of cultivation expenditure in all the selected crops. Maize recorded the highest average yield of 32 quintals per acre and generated the highest average income of Rs.73,600 per acre. Further, maize achieved the highest net income of Rs.31,500 per acre and net economic efficiency of 74.8 percent, compared to paddy and cotton. The study concludes that maize cultivation is the most profitable and economically efficient crop in the study area. Appropriate measures to improve irrigation facilities, reduce cultivation costs and promote efficient resource utilization can enhance farm profitability and agricultural sustainability.

Keywords: Economic Efficiency, Cost of Cultivation, Net Income, Paddy, Maize, Cotton, Profitability, Irrigation, Cropping Pattern, Telangana.

Importance of Agriculture Sector:

Agriculture is a multidimensional sector essential for food production, employment, and economic growth. It advances through scientific innovation and sustainable practices that ensure food security, environmental protection, and rural development. Globally, agriculture contributes about 4.3% to GDP while employing 26.4% of the workforce. In developing economies, its share in employment is far greater than in GDP, with over 60% of the population depending on it for livelihood (FAO, 2021). Since independence, agriculture has been a pillar of India's economy. Its share in GDP has declined from 59% in 1950–51 to about 17% today, yet it continues to support more than half of the rural population through employment and sustains the nation's food requirements for over 1.4 billion people, while also contributing to exports (Dutt & Sundharam, 2023). Agriculture drives industrial growth by supplying raw materials to key sectors such as textiles, sugar, edible oils, fertilizers, and pesticides. Nearly half of industrial income stems from agricultural-based industries. Exports of products like basmati rice, tea, coffee, fruits, vegetables, meat, and fish help earn valuable foreign exchange. The sector also generates significant revenue for both central and state governments through land taxes and supports transport sectors like railways and ports that handle agricultural commodities (Dutt & Sundharam, 2023).

Agriculture continues to be the backbone of the Indian economy, providing livelihood to a large proportion of the rural population. Despite rapid industrialization and expansion of the service sector, agriculture remains a vital source of employment, food security, and raw materials for various industries. In Telangana, agriculture plays a significant role in sustaining rural livelihoods and contributing to the state's economic development. The agricultural sector is characterized by diverse cropping patterns, varying landholding structures, and dependence on different sources of irrigation.

The efficiency of agricultural production has become increasingly important due to rising cultivation costs, shrinking farm sizes, labour shortages, and fluctuations in market prices. Economic efficiency in agriculture refers to the ability of farmers to maximize output and income from the available resources while minimizing production costs. Understanding crop-wise economic efficiency is essential for improving farm profitability and ensuring sustainable agricultural development.

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Warangal district is one of the agriculturally important regions of Telangana, where crops such as paddy, maize, and cotton occupy a prominent place in the cropping pattern. Farmers in the district adopt different cultivation practices depending on land availability, irrigation facilities, market opportunities, and input accessibility. However, increasing production costs and uncertain returns have created challenges for farm households in selecting economically viable crops.

In this context, the present study was undertaken in Punnole village of Wardhannapet mandal to examine the socio-economic characteristics of farmers, landholding patterns, sources of irrigation, cost of cultivation, crop productivity, income levels, and economic efficiency of major crops. The study focuses on paddy, maize, and cotton, which are the principal crops cultivated in the village. An assessment of their comparative profitability and economic efficiency provides valuable insights for farmers, policymakers, and extension agencies. The findings of the study are expected to contribute to better crop planning, resource allocation and formulation of suitable agricultural development strategies in the region.

Conceptual Framework

The conceptual framework of the study is based on the relationship between farm resources, cultivation practices, production performance, and economic outcomes. The socio-economic characteristics of farmers such as age, education, social category, and land ownership influence agricultural decision-making and resource utilization. Land resources, irrigation facilities, labour availability, and input use determine the cost of cultivation and productivity of crops. The cultivation process involves various agricultural operations including land preparation, seed application, manure and fertilizer use, irrigation, labour utilization, and harvesting. These inputs directly affect crop yield and production levels. The output obtained from cultivation, combined with prevailing market prices, determines the gross income earned by farmers.

Economic efficiency is measured through the relationship between income and cultivation costs. Higher productivity and lower production costs result in greater net income and improved economic efficiency. The study evaluates the economic efficiency of paddy, maize, and cotton by comparing average income, cost of cultivation, net income, and efficiency levels. The framework assumes that efficient resource utilization leads to higher profitability and improved farm sustainability. Thus, socio-economic factors, resource endowments, production practices, and market conditions jointly influence the economic performance of crop cultivation.

Schultz (1964) emphasized that farmers are generally rational in resource allocation and that improvements in productivity depend largely on efficient use of available resources and adoption of improved technologies. **Mellor (1966)** highlighted the importance of agricultural modernization in enhancing farm productivity and rural incomes. The study argued that efficient allocation of land, labour, and capital is crucial for increasing agricultural output. **Rao and Gulati (2005)** examined agricultural growth and profitability in India and found that rising input costs significantly affected farm income. They stressed the need for improving productivity and resource-use efficiency. **Narayanamoorthy (2007)** studied irrigation and crop productivity in India and observed that assured irrigation substantially increased crop yields and profitability. The study concluded that efficient water management is essential for improving farm efficiency. **Birthal, Joshi and Gulati (2015)** analyzed changing cropping patterns and farm profitability in India. Their findings revealed that crop diversification and adoption of high-value crops improved farm income and reduced production risks. The study also emphasized the importance of market access and technological adoption in enhancing economic efficiency. These studies collectively indicate that efficient utilization of land, labour, irrigation, and modern inputs significantly influences crop productivity, farm income, and overall economic efficiency. The present study builds upon these findings by examining the comparative economic efficiency of paddy, maize, and cotton cultivation in Punnole village of Warangal district.

Methodology:

The present study uses both primary and secondary data. Primary data collected through a structured questionnaire, designed using a random sampling method to capture accurate information from farmers. In the first stage, selection of district, on the base of irrigation, crop intensity, and crop diversity. Warangal relies mainly on bore-well with high crop intensity and multi-cropping of maize and groundnut. In the second stage, Wardhannapet mandal was selected based on higher

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agricultural potentiality and moderate irrigation facilities too. In the third stage, one village is Punnole it was located just 2 km from the Khammam-Warangal main road, it offers great logistics for moving produce. Farmers here highly depend on agriculture, growing both staple crops of paddy, maize and vegetables too. Finally, in the fourth stage, a total 60 respondent's selection in village was randomly selected in 2025 year. Secondary data were drawn from published reports, books, and articles on agricultural production and livelihoods in India and Telangana.

According to Mandal Statistical Hand book of Wardhannapet in Ponnole village the total population about 5000 with about 1250 households of the population BC and SC categories are dominant. Coming to farmers roughly 800 active and another 200 are inactive in cultivating the crops. They are mainly cultivating Paddy, Maize, Cotton and Chilly even Vegetables also harvesting in main Karif and rabbi seasons. In Punnole village total number of farmers 800/60 = 13.3, whereas, therefore, the ratio of the respondents from the total farmers has been worked out 1: 13 which mean every 13th farmer as the respondent for the study.

Objectives of the Study:

1. To examine the socio-economic characteristics and agricultural resource base of the respondent farmers in Punnole village.
2. To analyze the crop-wise cost of cultivation, yield, price and income of major crops such as paddy, maize and cotton.
3. To evaluate and compare the economic efficiency and profitability of major crops cultivated by the respondent farmers.

To prove find out these objective from the field investigation the study proposed 5 primary data based table with simple percentages and averages. The tables mainly on social aspects like community, education, age wise distribution of the respondents. Agricultural related aspects of land ownership, type of land source of irrigation and cropping pattern were discussed. In the economic efficiency point of view cost of cultivation and its components, average yield, price, income and finally net average profitable income and its efficiency will be discussed.

Table – 1 reveals the social category-wise, age and educational -wise distribution of the respondent farmers in the sample village of Punnole in Waradhanpet mandal of Warangal district. Out of the 60 respondents a majority 37 respondents representing for 61.7 percent belong to the Backward Classes category, it indicates that the BC community constitutes the dominant section of the farming households in Punnole village. The Forward caste category respondents are 15 accounting for 25.0 percent and it is the second-largest group among the respondents in the sample village. The Scheduled Castes (SC) comprises 6 respondents with 10.0 percent**,** while only 2 respondents considered as 3.3 percent belong to the Scheduled Tribes (ST) category. The distribution shows that not uniform trend because of population trends were reflected on the size of respondents. This pattern reflects the social composition of the selected village where agriculture is predominantly practiced by BC and OC category farmers.

Table – 1

Distribution of the Respondents According to Community, Education level, and Age –wise

Indicators	Sub-indicators	Total Respondents	Percentage
Social Category	SC	06	10.0
	ST	2	3.3
	BC	37	61.7
	OC	15	25.0

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	Total	**60**	**100.0**
Level of Education	<25	11	18.3
	26 - 35	12	20.0
	36-45	18	30.0
	46-55	10	16.7
	56 - 65	5	8.3
	Above 65	4	6.7
	Total	**60**	**100.0**
Age wise	Illiterates	15	25.0
	Primary	18	30.0
	Secondary	21	35.0
	Higher	6	10.0
	Total	**60**	**100.0**

Source: Field Study

The age-wise distribution shows that the respondents are predominantly concentrated in the economically active age groups. The largest proportion of 18 respondents, constituted as 30.0 percent are within the 36–45 years age group. This is followed by 12 respondents considered as 20.0 percent in the age group of 26–35 years and 11 respondents accounting for 18.3 percent below 25 years of age. The 46–55 years age group 10 respondents accounting for 16.7 percent. The elder age groups constitute a smaller share of the sample with 5 respondents equals to 8.3 percent and in the 56–65 years category and 4 respondents with 6.7 percent are in the above 65 years**.**

The educational profile of the respondents indicates a moderate level of literacy among the respondent households. Among the total 60 respondents, 21 respondents representing for 35.0 percent have completed their secondary level of education and it is the largest educational category than the other levels of education, then followed by 18 respondents constituted as 30.0 percent who have attained their primary education. The data also noted that 15 respondents accounting for 25.0 percent are illiterates**,** indicating that a considerable proportion of farmers still lack formal education. Only 6 respondents noted as 10.0 percent of respondents completed their higher education including intermediate, degree and above.

The data highlights the socio-economic characteristics reveals that the majority of the respondents are belonging to the BC community and OC are the second largest, both together about 87.0 percent the remaining SC and ST category respondents are nominal. The agriculture ownership is dominating by the BC and OC categories in the village. The dominance of middle-aged farmers with about 67.0 percecent are in active and productive age groups which is indicates that the favorable conditions possessed by the majority of respondents in the sample village. However, the presence of a substantial proportion of illiterate farmers highlights the need for continued extension education and awareness programs. The social composition and age structure of the respondents provide an important foundation for understanding agricultural decision-making and livelihood patterns in the study area.

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Table – 2

Distribution of the Respondents and Land Particulars According to Land possession, Type of Land, Source of Irrigation and Cropping Pattern

Indicators	Sub-indicators	Total Respondents	Percentage	Land Particulars	Percentage
Land Possession	Own Land	42	70.0	152	46.1
	Leased Land	32	53.3	116	35.2
	Own and Leased	18	30.0	69	20.9
	Crop Sharing	12	20.0	62	18.8
	Total	60	100.0	330	100.0
Type of Land	Wet Land	48	80.0	124	37.6
	Dry-land	38	63.3	139	42.1
	Wet + dry	26	43.3	67	20.3
	Total	60	100.0	330	100.0
Source of Irrigation	Rain-fed	38	63.3	139	42.1
	Tank	10	16.7	23	7.0
	Bore-well	32	53.3	80	24.2
	Stream / river	8	13.3	21	6.4
	More than one	28	46.7	48	14.5
	Total	60	100.0	330	100.0
Cropping pattern	Paddy	41	68.3	122	37.0
	Maize	32	53.3	126	38.2
	Cotton	27	45.0	82	24.8
	More than one	40	66.7	82	24.8
	Total	60	100.0	330	100.0

Source: Field Study

Table – 2 presents the distribution of the respondent farmers according to land possession, type of land, source of irrigation and cropping pattern in the sample village of Punnole in Wardhannapet mandal of Warangal district. Out of the total 60 respondents, 42 respondents accounting for 70.0 percent possess their own land. The total extent of owned land is 152 acres,

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representing for 46.1 percent of the total cultivated land. The leased land category comprises of 32 respondents constituting for 53.3 percent with an area of 116 acres accounting for 35.2 percent of the total land. The respondents who cultivating both own and leased land are 18 constituting as 30.0 percent with the area of 69 acres representing for 20.9 percent of the total land of 330 acres. Crop sharing is also practiced by 12 respondents accounting for 20.0 percent with an extent of 62 acres representing for 18.8 percent of the total land. The distribution indicates that owned cultivation is the dominant form of land possession in the village, though leased cultivation also plays a significant role in the village economy. The data reflects the existence of diversified land tenure arrangements among the respondent farmers.

The type of land-wise distribution reveals that wet land cultivation is predominant among the respondents. Out of the total 60 respondents, 48 respondents accounting for 80.0 percent possess wet land with an extent of 124 acres constituting as 37.6 percent of the total 330 acres land. Dry land is cultivated by 38 respondents representing for 63.3 percent with an extent of 139 acres accounting for 42.1 percent of the total land. The respondents possessing both wet and dry lands are 26 constituting as 43.3 percent with an area of 67 acres representing as 20.3 percent of the total land. The data shows that both wet and dry lands are important components of the farming system in the village, while dry land occupies a relatively larger share in terms of acreage.

The source of irrigation-wise distribution indicates that rain-fed agriculture continues to be the major source of cultivation in the village. Among the respondents, 38 accounting for 63.3 percent depend on rainfall for cultivation, covering 139 acres representing for 42.1 percent of the total cultivated land. Bore-well irrigation is utilized by 32 respondents constituting as 53.3 percent with an extent area of 80 acres accounting for 24.2 percent. Tank irrigation is practiced by 10 respondents representing for 16.7 percent with 23 acres constituting as 7.0 percent of the total land. Stream or river irrigation is utilized by 8 respondents accounting for 13.3 percent with 21 acres representing for 6.4 percent of the total area. Further, 28 respondents are constituting as 46.7 percent depend on more than one source of irrigation covering 48 acres accounting for 14.5 percent of the total land. The distribution indicates that rainfall and bore-well irrigation are the principal sources of water for agricultural activities in the sample village.

The cropping pattern of the respondents reveals that paddy, maize and cotton are the major crops cultivated in the village. Paddy is cultivated by 41 respondents accounting for 68.3 percent covered by 122 acres representing for 37.0 percent of the total 330 cropped area. Maize is grown by 32 respondents constituting as 53.3 percent with an area of 126 acres accounting for 38.2 percent of the total 330 cropped area. Cotton cultivation is undertaken by 27 respondents representing for 45.0 percent with an extent of 82 acres accounting for 24.8 percent of the total cropped area. The data also shows that 40 respondents are accounting for 66.7 percent cultivate more than one crop, covered by 82 acres representing for 24.8 percent of the total area. The cropping pattern reflects the prevalence of crop diversification among the respondents, with paddy and maize emerging as the major crops cultivated in the sample village.

The data highlights the land and cultivation characteristics of the respondent farmers. The majority of the respondents possess their own land, though leased cultivation is also widely practiced. Both wet and dry lands are available in the village, with dry land occupying a larger proportion of the cultivated area. Rain-fed agriculture and bore-well irrigation are the major sources of irrigation supporting agricultural production. Paddy and maize dominate the cropping pattern, while a considerable proportion of farmers follow multiple cropping practices. The findings indicate that the agricultural system of the village is characterized by mixed landholding patterns, diversified sources of irrigation and crop diversification, which together play a significant role in sustaining the livelihoods of the farming households.

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Table – 3

Agricultural Operation and Crop-wise Cost of Cultivation of the Respondent Farmers

Sl. No.	Agricultural Operations	Paddy	Percent	Maize	Percent	Cotton	Percent
1	Land Rent	11500	21.6	8500	20.2	8500	15.2
2	Land Preparation	6000	11.3	4500	10.7	5500	9.8
3	Manure	3500	6.6	3500	8.3	3500	6.3
4	Seeds	1000	1.9	1500	3.6	1500	2.7
7	Fertilizers & Pesticides	5000	9.4	3600	8.6	12500	22.3
8	Irrigation	2000	3.8	2000	4.8	0	0.0
9	Labour	18000	33.8	13500	32.1	22500	40.2
10	Harvesting	3200	6.0	3000	7.1	0	0.0
11	Others	3000	5.6	2000	4.8	2000	3.6
12	Total Cost of Cultivation	53200	100.0	42100	100.0	56000	100.0

Source: Field Study

Table – 3 presents the agricultural operation-wise and crop-wise cost of cultivation incurred by the respondent farmers for the major crops cultivated in the sample village, namely paddy, maize and cotton. The data reveals significant variations in the cost structure among the crops depending upon the nature of cultivation practices, labour requirements and input utilization whatever they have.

The cost of cultivation of paddy is Rs. 53200/- , of which Rs. 18000 per acre constituted as 33.8 percent of expenditure on labour as the highest, then followed by land rent, land preparation, fertilizers and pesticides, manure, harvesting, others, irrigation and seeds costs are Rs. 11500 with 21.6 percent, Rs. 6000 equals to 11.3 percent Rs. 5000/- considered as 9.4 percent, Rs. 3500 with 6.6 percent, Rs. 3200 equals to 6.0 percent, Rs. 3000 considered as 5.6 percent, Rs. 2000 accounting as 3.8 percent and Rs. 1000 with 1.9 percent respectively. In case of Maize crop the cost of cultivation is Rs. 42100 per acre, of the cost of cultivation Rs. 13500/- considered as 32.1 percent on labour followed by Rs.8500 with 20.2 percent, Rs. 4500/- equals to 10.7 percent, Rs. 3600 accounting for 8.6 percent, Rs. 3500 noted as 8.3 percent, Rs. 3000 constituted as 7.1 percent, Rs. 2000 representing for 4.8 percent, Rs. 2000 with 4.8 percent and RS. 1500 considered as 3.6 percent on land rent, land preparation, fertilizers & pesticides, manure, harvesting, irrigation and others and seeds are according in that order. In the case of cotton cultivation is Rs. 56000 per acre and it is the highest compared to rest of crops Paddy and Maize. Of the total cost of cultivation the largest share of expenditure is incurred on labour, amounting to Rs. 22,500 constituting for 40.2 percent. After labour the next major component is fertilizers & pesticides, which is Rs. 12,500 representing for 22.3 percent, Land rent is Rs. 8,500 constituted as 15.2 percent, land preparation expenses of Rs. 5,500 accounting for 9.8 percent. The expenditure on manure is Rs. 3,500 representing for 6.3 percent, while other expenses is Rs. 2,000 account for 3.6 percent, seeds require Rs. 1,500 constituted as 2.7 percent of the total cost. It is noted that there is No expenditure on irrigation and harvesting operations, because of cotton is pure dry land area crop and harvesting totally done by human labour these expenditure calculated in the labour cost.

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The data highlights that labour cost is the dominant component of cultivation expenditure in all the three crops, accounting for 33.8 percent in paddy, 32.1 percent in maize and 40.2 percent in cotton. Cotton cultivation records the highest total cost of cultivation followed by paddy and maize. The expenditure on fertilizers and pesticides is substantially higher in cotton cultivation compared to paddy and maize, reflecting its greater dependence on chemical inputs. Paddy cultivation incurs relatively higher irrigation and harvesting expenses, while maize cultivation records the lowest overall cost of cultivation. The findings indicate that labour, land rent and input costs are the major determinants of cultivation expenditure among the respondent farmers in the sample village. On the other hand the findings also noted as that the crop of cotton truly dry-land crop in this village, compared to the other crops cotton not only chemical intensive but also labour orientation crop as per the data insights.

Table – 4

Crop-wise Averages of Yield, Price and Income per acre/per Quintal

Name of the Crop	Yield	Price	Average Income
Paddy	25	2600	65000
Maize	32	2300	73600
Cotton	11	6200	68200

Source: Field Study

Table – 4 shows the crop-wise average yield, price per quintal and income per acre of the respondent farmers in the sample village. The data indicates variations in the productivity, price and income per acre of paddy, maize and cotton cultivation. Among the selected crops, Paddy records an average yield of 25 quintals per acre and its average market received by the farmers is Rs. 2,600 per quintal, and the average income worked out as Rs. 65,000 per acre. The average yield of Maize recorded as the highest 32 quintals per acre but the average market price received by the respondent farmers Rs. 2300 per quintal it is comparatively lower average than the paddy and cotton crops. The average income of Maize reported as Rs. 73600/- per acre as relatively the higher than the rest crops. In case of Cotton average productivity is 11 quintals per acre and the cotton farmers were received on an average price of Rs. 6200/- per quintals and the average income on an average is Rs. 68200/- per acre.

The data highlights that all the crops average incomes are nearly close but not similar. In the productivity aspect Maize and Cotton are the highest and lowest. In the average price point of view, Cotton and Maize are as the higher and lower. While in the average income point of view the higher and lower observed from Maize and Paddy crops as noted from the data. After examine the data, Maize is the most profitable crop in terms of income per acre, followed by cotton and paddy. While Maize profitability is driven by higher productivity, Cotton depends largely on favorable market prices. The findings indicate that both yield and price play a crucial role in determining the income levels of the respondent farmers. Paddy continues to be an important crop due to its stable demand and assured market. This indicates that maize cultivation is economically advantageous in the study area. Cotton has more marketable advantage

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Table – 5

Crop-wise Averages Net Economic Efficiency

Name of the Crop	Average Income	Average Cost of Cultivation	Average Net Income	Net Economic Efficiency
Paddy	65000	53200	11800	22.2
Maize	73600	42100	31500	74.8
Cotton	68200	56000	12200	21.7

Source: Field Study

Table – 5 shows the crop-wise average income, average cost of cultivation, average net income and net economic efficiency of the respondent farmers in the sample village. The data indicates variations in the profitability and economic efficiency of paddy, maize and cotton cultivation.

Among the selected crops, Paddy records an average income of Rs. 65,000 per acre and the average cost of cultivation was estimated at Rs. 53,200 per acre. After deducting the cost of cultivation, the average net income worked out as Rs. 11,800 per acre. The net economic efficiency of paddy cultivation is calculated at 22.2 percent. The average income of Maize is Rs. 73,600 per acre, which is the highest among all the selected crops. The average cost of cultivation is Rs. 42,100 per acre, which is comparatively lower than paddy and cotton. As a result, the average net income of maize worked out as Rs. 31,500 per acre. The net economic efficiency is worked out to 74.8 percent, which is significantly higher than the remaining crops. In the case of Cotton, the average income is Rs. 68,200 per acre and the average cost of cultivation is Rs. 56,000 per acre, which is the highest among the selected crops. Consequently, the average net income is estimated as Rs. 12,200 per acre. The net economic efficiency is calculated at 21.7 percent. Although cotton farmers receive a higher market price for their produce but they received the lower net economic efficiency.

The data highlights that the average incomes of all the crops are relatively close but not similar. In terms of average income, Maize and Paddy recorded the highest and lowest incomes respectively. In the average cost of cultivation aspect, Cotton and Maize emerged as the highest and lowest cost crops respectively. From the net income point of view, Maize and Paddy recorded the highest and lowest net incomes. Similarly, in terms of net economic efficiency, Maize registered the highest efficiency of 74.8 percent, whereas Cotton recorded the lowest at 21.7 percent. After examining the data, it can be concluded that maize is the most profitable and economically efficient crop among the selected crops. While maize profitability is driven by higher productivity and lower cultivation costs, cotton profitability is constrained by its high cultivation expenditure despite favorable market prices. Paddy continues to remain an important crop due to its stable demand and assured market, but its economic efficiency is comparatively lower than maize. The findings indicate that both income generation and cost management play a crucial role in determining the economic efficiency of crop cultivation among the respondent farmers. Though paddy provides a reasonable level of income, the relatively higher cultivation cost reduces its profitability. The higher profitability of maize is mainly attributed to its higher productivity and lower cultivation cost. Cotton has the high cost of cultivation considerably reduces their net returns

Major Findings

After examine the forgoing analysis the study has been find out the major findings on Social indicators, agricultural aspects and economic efficiency point of view. The social aspects of respondents: the majority of the respondent farmers belong to the BC community as 61.7 percent, followed by OC farmers with 25.0 percent. About two-thirds of the respondents are in the productive age group of 26–55 years, while secondary education is the dominant educational level. This indicates the availability of an active agricultural workforce with moderate literacy levels. Agricultural production factors point of view

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INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881(Print); IMPACT FACTOR :10.16(2026); IC VALUE:5.16; ISI VALUE:2.286
Peer-Peer Reviewed, Refereed & Open Access International Journal - As per UGC Norms
(Fulfilled Suggests Parameters of UGC by IJMER)
Volume:15, Issue:6(1), June 2026
Scopus Review ID: A2B96D3ACF3FEA2A
Article Received: Reviewed: Accepted
Publisher: Sucharitha Publication, India
Online Copy of Article Publication Available: www.ijmer.in

the study noted as mainly on land ownership, type of land, source of irrigation, and cropping pattern. In the landholding point of view own land cultivation is predominant, with 70.0 percent of the respondents possessing their own land. While sources of irrigation, rain-fed agriculture continues to the principal source of irrigation covered as 42.1 percent of the cultivated area, followed by bore-well irrigation. In the cropping pattern point of view Paddy and maize are the major crops cultivated in the village. A significant proportion of respondents practice crop diversification by cultivating more than one crop, reducing dependence on a single crop. In the cost of cultivation aspect that the Labour cost is the major component of cultivation expenditure in all crops. Cotton recorded the highest cost of cultivation with Rs. 56,000 per acre, while maize recorded the lowest as Rs. 42,100 per acre. In the economic efficiency point of view, Maize emerged as the most profitable crop with the highest average income Rs. 73,600, net income Rs. 31,500 and net economic efficiency 74.8 percent. Cotton and paddy recorded comparatively lower economic efficiency due to their higher cultivation costs.

Conclusion:

Based on the findings the study proposes the some of the valuable suggestions like Promote maize cultivation in suitable areas due to its higher profitability and economic efficiency. Strengthen irrigation facilities through bore-well recharge, tank restoration and water conservation measures. Reduce cultivation costs by encouraging mechanization and efficient labour management practices. Provide timely supply of quality seeds, fertilizers and extension services to improve crop productivity. Enhance farmer awareness through training programmes on scientific cultivation practices, cost management and market opportunities. The study reveals that agriculture in Punnole village is predominantly practiced by BC and OC farmers possessing moderate educational backgrounds and active working-age populations. Own cultivation, rain-fed farming and crop diversification characterize the agricultural system of the village. Paddy, maize and cotton are the principal crops, with labour constituting the largest component of cultivation costs. Among the selected crops, maize demonstrated superior performance in terms of productivity, profitability and economic efficiency owing to its higher yield and lower cultivation cost. Although cotton received higher market prices, its profitability was constrained by substantial input and labour expenses. Paddy continued to provide stable returns but with comparatively lower economic efficiency. Therefore, improving irrigation facilities, reducing production costs and promoting economically efficient cropping systems can significantly enhance farm income and agricultural sustainability in the study area.

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INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY EDUCATIONAL RESEARCH
ISSN:2277-7881(Print); IMPACT FACTOR :10.16(2026); IC VALUE:5.16; ISI VALUE:2.286
Peer-Peer Reviewed, Refereed & Open Access International Journal - As per UGC Norms
(Fulfilled Suggests Parameters of UGC by IJMER)
Volume:15, Issue:6(1), June 2026
Scopus Review ID: A2B96D3ACF3FEA2A
Article Received: Reviewed: Accepted
Publisher: Sucharitha Publication, India
Online Copy of Article Publication Available: www.ijmer.in

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