

A COST-BENEFIT ANALYSIS OF POMEGRANATE PRODUCTION IN SANGLI DISTRICT

Mr. Sachin Bajarang Jadhav

Research Scholar
Dept. of Geography,
Shivaji University, Kolhapur-416004.
Email sbjadhav.ac@gmail.com

ABSTRACT

The pomegranate crop obtained a great significance due to the large suitability in drought prone region of Sangli district. In the present study, an attempt has been made to assess the cost-benefit ratio of pomegranate production in Sangli district. Cost-benefit analysis is a method used in farming to evaluate the potential profitability of any crop and it plays an important role in encouraging particular crop enterprises. Pomegranate cultivation is practiced more or less throughout the Sangli district but Atpadi, Jat, Kavathe Mahankal, Miraj and Khanapur tahsils are the major pockets of these fruit crops.

The present study is based on primary and secondary data. Statistical techniques like percentage, average, gross & ratio have been used to analyze as well as table and graph used to present the collected data. The results indicate that there was negative correlation observed between land holding size and establishment cost of pomegranate means while increased the size of land holding decreased the establishment cost. The average annual cost incurred by pomegranate growers was high in recurring cost (79.95%) followed by marketing (10.88) and establishment (9.17%) cost respectively. All the costs except the establishment cost, returns, yield, received price and cost-benefit ratio was high in medium size of land holdings followed by large and small size of land holdings respectively. The cost-benefit ratio of pomegranate production was high in medium size of farms i.e. 1:2.88 followed by large (1:2.58) and small (1:2.35) size of farms respectively. It is evident from the discussions and results, concluded that the pomegranate cultivation proves the good economic profitability of with great prospects.

Keywords: Pomegranate, Cost-benefit Ratio, Profitability, Economic feasibility, Sangli etc.

INTRODUCTION:

Sangli district is famous for production of sugarcane, grapes, pomegranate, and turmeric crops in Maharashtra. In which, pomegranate crop obtained a great significance due to the large suitability in drought prone region. The area and production of pomegranate in Sangli district have been increasing noticeably from last two decades. The geography of the region influences the development of fruit cultivation. Cost-benefit analysis is a method used in farming to evaluate the potential profitability of any crop and it plays an important role in encouraging particular crop enterprises. It is important for decision makers to determine whether a crop is worthwhile by comparing expected costs and benefits.

Certainly, pomegranate is a profitable venture but with the rapid increase in acreage and production, several issues in cultivation have emerged. Increased production only would not bring revolution in the agricultural economy unless these productions are associated with an efficient profit. Therefore, the cost-benefit analysis of pomegranate cultivation assumed a special significance. The Cost-Benefit ratio analysis of pomegranate indicates the return to the cultivator for every rupee invested in cultivation.

Pomegranate cultivation is in practice more or less throughout the Sangli district. Nevertheless, Atpadi, Jat, Kavathe Mahankal, Miraj and Khanapur tahsils are the major pockets of these fruit crops. The present research article is devoted to the cost-benefit analysis of pomegranate cultivation in the district Sangli.

STUDY REGION:

The Sangli district is located in the western part of Maharashtra state which is well known as rain shadow or drought prone region. The geographical location of the district is between 16.45° & 17.22° North Latitude and 73.42° & 75.40° East Longitude (Fig.1). The total area of the district is 8572 sq. km. that accounts for 2.8 percent of the total area of the State. There are 10 tahsils in this district. Total population of district is 28,22,143 according to census, 2011.

The district has different geographical, economic, and social statuses. The climate of this district is the tropical wet-dry climate on the whole agreeable and is characterized by general dryness throughout the year except during the South-West monsoon season. In general, climate becomes hotter as one proceeds from West to East. Climatically, this region falls under the great monsoon and is associated with the rain shadow region of the Sahyadri Mountain. The average annual rainfall over 1000 mm receives in the western part and below

500 mm in eastern part of district. The eastern part of district faces frequently severe drought conditions.

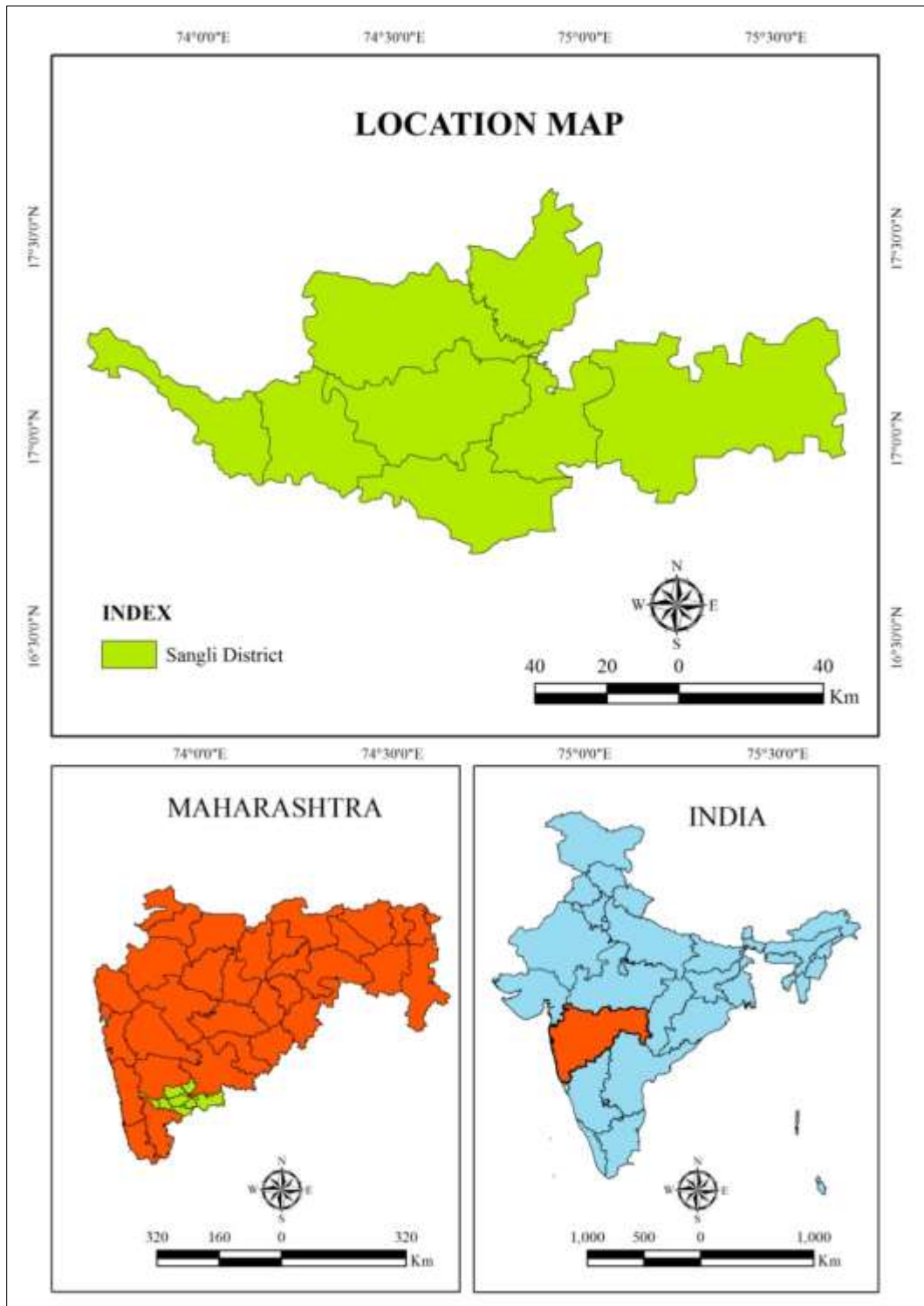


Fig. 1: Location Map of Sangli District

Out of the total geographical area of the study region, about 77.54% is net sown area. Out of the total net sown area, about 22.3% of the land is irrigated in the District Sangli. Out

of the total cropped area 55.7% is possessed by cereal crops, 11.6% oil seeds, 13.5% sugarcane, 4.0% fodder crops, 4.3% fruit crops, and remained 10.9% is possessed by other cash crops.

OBJECTIVES:

1. To analyze the cost-benefit ratio of pomegranate production in the Sangli District.
2. To study the prospects of the pomegranate cultivation in Sangli District.

DATA BASE & METHODOLOGY:

The primary data pertaining to the cost and benefit of pomegranate cultivation has been collected through conducting intensive fieldwork by using questionnaire and personal interviews with the pomegranate growers and traders of the study area. The data covering complete agricultural year 2020-21. The secondary data concerned with the pomegranate cultivation has been also referred for collecting relevant information from the different sources such as newspapers, socio-economic reviews of Sangli district, district census hand book, and different websites etc.

In order to fulfill the objectives of the study, multistage sampling method was adopted in the selection of tahsils, villages and pomegranate growers. Initially, Sangli district was purposively selected for the study of pomegranate cultivation in Maharashtra. In second stage, seven tahsils namely Atpadi, Jat, Kavathe Mahankal, Tasgaon, Khanapur, Miraj and Kadegaon were selected purposively as the tahsils have highest acreages under pomegranate cultivation. In third stage, out of the total pomegranate growing, 10% villages from each tahsils were selected purposely on the basis of maximum area and production. In last stage of sampling design, five pomegranate growers were selected randomly from each selected sample villages. Totally 155 pomegranate growers were selected for the present study.

The collected data were analyzed using the standard cost concept of establishment cost, recurring cost and marketing cost to determine cost-benefit ratio. The statistical techniques like average, percentage, gross and ratio have been taken into account to assess the cost and benefit of pomegranate cultivation. The bar graph is also used for graphical presentation.

DISCUSSION AND ANALYSIS:

The success of any enterprise in agriculture can be judged on the basis of economic feasibility. The cost-benefit ratio of pomegranate cultivation was determined on the basis of inputs and outputs. The Cost-Benefit ratio indicates the return from each rupee investment in pomegranate cultivation. Per hectare average cost-benefit ratio of pomegranate as per land holding size were calculated and presented in Table 1. Small farmers mean the less than 1 ha, medium farmers mean the 1.1 to 2 ha and large farmers mean the more than 2 ha pomegranate cultivators. The results obtained from the present investigation have been summarized under the following heads.

A. PRODUCTION COSTS:

While understanding the economic feasibility of pomegranate crop, the production cost structure is studied under three heads of expenses viz. establishment cost, recurring cost, and marketing cost.

1. Establishment Cost: Initial investment made for creating the basic structure and set up a pomegranate orchard is known as ‘establishment cost’. It is also referred as ‘fixed cost’. This cost head includes factor costs from preparation of land for plantation up to the beginning of the first bahar. Generally, this duration is of about 18 to 24 months, which is known as gestation period. The cash outflows during this non bearing or unproductive stage of orchards. Annual establishment cost is taken into account for estimation of cost of cultivation or production. Here total establishment cost is apportioned to the annual account on the basis of the commercially viable life of the orchards i.e.10 years and annual establishment cost was obtained as below.

$$\text{Annual Establishment Cost} = \frac{\text{Total Establishment Cost}}{\text{Commercially Viable Life of the Orchards}}$$

The overall average gross establishment cost per hectare of pomegranate orchard has been estimated as Rs.3,16,756.06/ha. Out of the gross establishment cost, the operational cost and material cost constituted 7.3% and 37.9% per hectare respectively. The average gestation cost comprises the variable, fixed and managerial cost. The variable cost includes the operational cost (15.0%), material cost (11.8%) and interest on working capital (1.6%) which constitutes the 28.4% in gross establishment cost. Fixed cost comprises the Rental Value of Land, Land Taxes, Annual Depreciation Value, and Interest on Fixed Capital which

constitutes the 22.8% in gross establishment cost. The average cost computed for managerial cost was 6.6% in gross establishment cost.

The results revealed that on an average, total annual cost of establishment per hectare was found Rs.31,675.61 per ha. It was highest in small farms (Rs.32,775.16), followed by medium (Rs.31,705.55) and large farms (Rs.30,546.11).

2. Recurring cost: It comprises factor costs for performing routine farm practices for every *bahar* which is known as cropping season of pomegranate and the rest period of the orchard. This is also known as ‘bahar cost’. This cost is divided into three constituent’s viz. variable cost, fixed cost and managerial cost.

The average annual recurring cost incurred by pomegranate growers was estimated as Rs.2,76,055.52. Among the total average recurring cost, the variable costs in overall constituted a major share of 76.60% (Rs.2,11,468.1) followed by the fixed cost with 18.27% (Rs.50,446.8) and managerial cost with 5.12% (Rs.14,140.6) during the bearing period in study area.

Among the three land holding categories of pomegranate growers, the recurring cost was high in medium size of farms (Rs.2,85,834.38) followed by large (Rs.2,76,831.73) and small farms (Rs.2,65,500.44).

3. Marketing Cost: This head includes factor costs for completing certain marketing operations such as harvesting, sorting or grading and packing of fruits at the field level. The charges deducted at the market place for loading, unloading, weighing or transport, commission of fruit agents and market fees of sale proceeds were computed under head of marketing cost.

Among the marketing cost labor cost shared high cost i.e. 65.12% in total marketing cost, after that transportation for local marketing shared 34.88%.

The results revealed that on an average, total marketing cost per hectare was found Rs.37,545.27. It was highest in medium size farms (Rs.41,226.25), followed by large (Rs.36,982.69) and small size farms (Rs.34,426.88) as per ha yield.

4. Gross Cost: The pomegranate fruit crop requires modern agro-equipments, timely materials and labor inputs. Therefore, the cost of pomegranate production was very high. Per hectare gross average cost for study region as a whole was Rs.3,45,276.39; in which the

highest contribution was recurring cost i.e. 79.95% (Rs.276055.52) followed by marketing cost 10.87% (Rs.37,545.27) and annual establishment cost was 9.17% (Rs.31,675.61).

Among different size of holdings, the gross cost of cultivation incurred by the medium size of holdings were high (Rs.3,58,766/ha) as compared to large (Rs.3,44,360.52/ha) and small (Rs.3,32,702/ha) size of holdings.

B. AVERAGE YIELD AND PRICE:

The average yield of pomegranate was 17.46 tons per ha. Moreover, good demand for pomegranate fruits in market leads to fetch the remunerative average price Rs.51.53 per k.g.

The highest yield was observed in medium size of holdings i.e. 19.18 ton/ha followed by large (17.20 ton/ha) and small (16.01 ton/ha) size of holdings respectively. As well as the average price received for pomegranate was highest in medium size of holdings i.e. Rs.53.95/kg that followed by large (51.73/kg) and small (48.91/kg) size of holdings respectively.

C. GROSS AND NET RETURNS:

The average gross return obtained by growers per hectare was Rs.9,02,479.10. While the gross returns obtained per hectare by medium size of holdings was high (Rs.10,34,491.25/ha) as compare to large (Rs.8,89,734.66/ha) and small (Rs.7,83,211.41/ha) size of holdings respectively.

The net profit earned by the growers was the composite result of production cost, yield of pomegranate and prices received for fruits in the market. Due to the well existing edapho-climatic conditions of the study area, the pomegranate crop gave a good response to higher inputs applied by the growers. Consequently, the annually average net returns was Rs.5,57,202.71 per ha. The net returns obtained per hectare by medium size of holdings was high i.e. Rs.6,75,725.07/ha as compare to large (Rs.5,45,374.14/ha) and small size of holdings (Rs.4,50,508.93/ha) respectively. These earned by respondents proves the good economic profitability of pomegranate cultivation.

D. COST-BENEFIT RATIO:

The Cost-Benefit ratio indicates the returns received for each rupee invested in pomegranate enterprise. This ratio was simply obtained by dividing gross returns to gross cost as below,

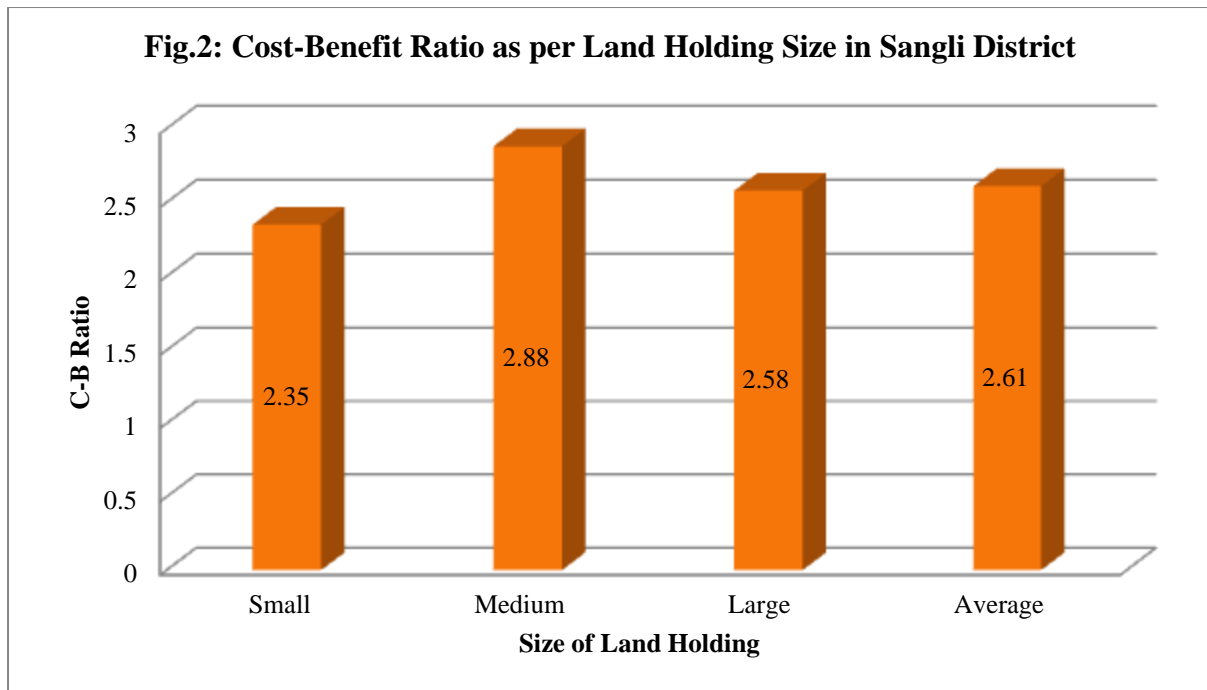
$$\text{CostBenefitRatio (CBR)} = \text{Grossreturns} \div \text{Grosscost}$$

Per hectare average cost-benefit ratio of pomegranate were calculated and presented in Table 1. The average cost-benefit ratio was 1:2.61 and which amply clears that why farmers lead to adopt this fruit crop on a large scale. The per hectare cost-benefit ratio obtained by medium size of holdings was high i.e. 1:2.88 as compared to large (1:2.58) and small size of holdings (1:2.35) respectively. (Fig.2)

Table 1: Average Cost-Benefit Ratio as per Land Holding Size in Sangli District
Table 4.1 Average Cost Benefit Ratio:

Sr. No.	Type of Cost	Heads	Small	Medium	Large	Average	Cost %
1	Establishment Cost	<i>i. Plantation Cost</i>					
		A. Operational Cost	25297.30	22984.00	21436.60	23239.30	7.3
		B. Material Cost	121752.60	120429.50	117707.80	119963.30	37.9
		<i>Total Plantation Cost</i>	<i>147049.90</i>	<i>143413.50</i>	<i>139144.40</i>	<i>143202.60</i>	<i>45.2</i>
		<i>ii. Gestation Period Cost</i>					
		I. Variable Cost					
		A. Operational Cost	48384.90	47411.20	46610.80	47468.97	15.0
		B. Material Cost	39970.70	37301.60	35051.20	37441.17	11.8
		C. Interest on Working Capital (6%)	5301.34	5082.77	4899.72	5094.61	1.6
		II. Fixed Cost/Capital Cost	75639.76	72441.46	68349.95	72143.72	22.8
		III. Managerial Cost	11405.00	11405.00	11405.00	11405.00	3.6
		<i>Total Gestation Cost</i>	<i>180701.69</i>	<i>173642.02</i>	<i>166316.67</i>	<i>173553.46</i>	<i>54.8</i>
		Gross Establishment	327751.59	317055.52	305461.07	316756.06	100.0
Annual Est. Cost Rs./ha.	32775.16	31705.55	30546.11	31675.61	9.17		
2	Recurring Cost	I. Variable Cost					
		A. Operational Cost	68395.30	70364.03	73649.61	70802.98	20.51
		B. Material Cost	119249.80	138258.16	128577.64	128695.20	37.27
		C. Interest on Working Capital (6%)	11258.71	12517.33	12133.64	11969.89	3.47
		II. Fixed Cost/Capital Cost	52456.01	50554.23	48330.21	50446.81	14.61
		III. Managerial Cost	14140.63	14140.63	14140.63	14140.63	4.10
		Total Recurring Cost	265500.44	285834.38	276831.73	276055.52	79.95
3	Marketing Cost	I. Labor Cost	22417.50	26845.00	24081.75	24448.08	7.08
		II. Transport Cost	12009.38	14381.25	12900.94	13097.19	3.79
		Total Marketing Cost	34426.88	41226.25	36982.69	37545.27	10.88
4	Gross Cost	(Rs./ha.) (1+2+3)	332702.48	358766.18	344360.52	345276.39	100.00
5	Average Yield	(Ton/ha.)	16.01	19.18	17.20	17.46	-
6	Average Price Received	(Rs./kg)	48.91	53.95	51.73	51.53	-
7	Gross Returns	(Rs./ha.) (5×6)	783211.41	1034491.25	889734.66	902479.10	-
8	Net Returns	(Rs./ha.) (7-4)	450508.93	675725.07	545374.14	557202.71	-
9	C-B Ratio	(7/4)	2.35	2.88	2.58	2.61	-

Source: Data Compiled by Researcher



Source: Data compiled by Researcher

CONCLUSIONS:

- There was negative correlation observed between land holding size and establishment cost of pomegranate. While increased the size of land holding decreased the establishment cost.
- The recurring cost of pomegranate was high in medium size of farms i.e. Rs.285834.38/ha followed by large (Rs.276831.73/ha) and small (Rs.265500.44/ha) size of farms respectively.
- The marketing cost of pomegranate was high in medium size of farms i.e. Rs.41226.25/ha followed by large (Rs.36982.69) and small (Rs.34426.88/ha) size of farms respectively.
- The average annual cost incurred by pomegranate growers was high in recurring cost (79.95%) followed by marketing (10.88) and establishment (9.17%) cost respectively.
- The average yield of pomegranate was high in medium size of farms i.e. 19.18 ton/ha followed by large (17.20ton/ha) and small (16.01 ton/ha) size of farms respectively.
- The average price received for pomegranate was high in medium size of farms i.e. Rs.53.95/kg followed by large (Rs.51.73/kg) and small (Rs.48.91) size of farms respectively.
- The gross returns of pomegranate production were high in medium size of farms i.e.Rs.1034491.25/ha followed by large (Rs.889734.66/ha) and small (Rs.783211.41/ha) size of farms respectively.
- The net returns of pomegranate production were high in medium size of farms i.e. Rs.675725.07/ha followed by large (Rs.545374.14/ha) and small (Rs.450508.93/ha) size of farms respectively.

- All the costs except the establishment cost, returns, yield, received price and cost-benefit ratio was high in medium size of land holdings followed by large and small size of land holdings respectively.
- The cost-benefit ratio of pomegranate production was high in medium size of farms i.e. 1:2.88 followed by large (1:2.58) and small (1:2.35) size of farms respectively.

It is evident from the above discussions and results, concluded that the pomegranate cultivation proves the good economic profitability of with great prospects.

REFERENCES:

1. Ahire, S. C. (2021). Cost, Yield, Profit Analysis of Pomegranate Variety in Dhule District (M. S.) India. *Journal of Scientific Research*, 65(7), 120-123. <https://www.ijsr.net/archive/v6i2/ART2017694.pdf>
2. Bachhav, N. B. (2020). Economics of Pomegranate Fruit Production in Drought Prone Region of Nashik District. *Journal of Emerging Technologies and Innovative Research*, 7(3), 438-441. <https://www.jetir.org/papers/JETIR2003069.pdf>
3. Dr. A. M Kamble, A. P. Waghmode & S. P. Mane (2019) “A Study of Socio-Economic Status And its Impact on Wrestling Player’s Performance in Solapur University (MS) India” *Review of Research*, ISSN: 2249-894X, Pp-1-8.
4. Dr. Banduke D. K. & Santosh P. Mane (2019) “Rice Productivity in Satara District: A Geographical Analysis.” *Research Journey Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015),(GIF)–0.676 (2013) Special Issue 144*, Pp-159-165.
5. Dr. D. C. Kamble and Mr. Santosh P. Mane (2018) “A Study of Irrigation Intensity of Different Sources in Malshiras Tahsil.” *Research Journey*, *Research Journey*, ISSN: 2348-7143 Impact Factor - (SJIF) – 6.261, (CIF) - 3.452(2015), (GIF)–0.676 (2013) Special Issue 144, Pp-28-36.
6. Dr. D. C. Kamble and Mr. Santosh P. Mane (2018) “Irrigation Pattern In Malshiras Tahsil Of Solapur District: A Geographical Analysis.” *Review of Research* ISSN2249-894X, impact factor: 5.2331(UIF), Volume, Issue-9 Pp-74-77.
7. Dr. D. C. Kamble and Mr. Santosh P. Mane (2018), “Agriculture Productivity in Malshiras: A Geographical Analysis,” *Aayushi International Interdisciplinary Research Journal* (ISSN 2349-638x) Impact Factor 4.574, Volume 2, Issue-9 Pp-658-662.
8. Gore, M.H., Nagargoje, S.R.,&Perke, D.S. (2017). Costs, returns and profitabilityof pomegranate production in Ahmednagar district. *Agric. Update*, 12 (TECHSEAR-10), 2666-2669.http://researchjournal.co.in/upload/assignments/12_2666-2669.pdf
9. Jadhav, S. B. (2020). Agricultural Problems and Measures in the Catchment area of Mhaisal lift irrigation project: A Geographical study.*Vidyawarta-Peer Reviewed International*

Refereed Research Journal, Special Issue, 111-117.https://www.vidyawarta.com/02/wp-content/uploads/2020/01/Emerging_Trends_and_Issues_in_Social_Sciences_01.pdf

10. Jadhav, S. B., & Kothavale, S. S. (2022). Atpadi: An Emerging Renowned Market Centre For Pomegranate In Sangli District. *Akshar Wangmay (UGC-Care Listed Journal)*, 5(2), 244-248.
11. Kothawale, S. S., & Jadhav, S. B. (2016). Crop Combinations of Sangli District: A Geographical Study. *Research Front-An International Peer Reviewed Multidisciplinary Research Journal*, Special Issue, 155-160.
https://drive.google.com/file/d/1ZdTFLIq__Gmjf485RxjV_DuIH-75upSa/view
12. Rede, G. D., & Bhattacharyya K. (2018). Financial Feasibility Analysis of Pomegranate Production in Solapur District of Maharashtra. *Indian Journal of Economics and Development*, 14(2), 199-212.
https://www.researchgate.net/publication/355166452_Financial_Feasibility_Analysis_of_Pomegranate_Production_in_Solapur_District_of_Maharashtra
13. Santosh P mane and Somnath B. Gaikwad (2019) "Agriculture Productivity Calculate Based on MG Kendall's Method in Malshiras Tahsil." *Research Journey*, ISSN: 2348-7143 impact factor: 3.261 (SJIF), Issue-114, Pp-145-151.
14. Somnath B Gaikwad, Santosh P Mane & Dashrath K Banduke (2019) "Crop Combination Calculate on Weaver's Method in Malshiras Tahsil." *Research Journey*, ISSN: 2348-7143, Impact Factor- (SJIF) 6.261, Special Issue 144 (A) Pp-145-151