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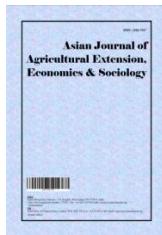
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## **A Comparative Economic Analysis of Tulsi and Other Competitive Crops in Central Part of India**

**Savita Chouhan<sup>1\*</sup> and A. K. Sarawgi<sup>1</sup>**

<sup>1</sup>*Department of Agriculture and Farm Management, JNKVV, Jabalpur – 482004, India.*

### **Authors' contributions**

*This work was carried out in collaboration between both authors. Author SC designed the study, analyzed data and wrote the first draft of the manuscript. Author AS supervised the study and revised the final manuscript. Author AS managed the literature searches. Both authors read and approved the final manuscript.*

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### **ABSTRACT**

The study has been conducted in Ratlam, Mandsaur and Neemuch districts in Malwa Plateau location of Madhya Pradesh. The researcher has been selected Tulsi crop on the premise of most regions included by it. From the selected districts, 6 blocks 30 villages (and forty five pattern farmers were decided on randomly for detail investigation. For estimation value and returns, fee ideas Cost Concepts and B.C. Ratio had been considered. The cost of cultivation becomes estimated to be Rs. 40811.31, Rs. 21892.11 and Rs. 34445.04 for Tulsi, Soybean and Maize respectively. Regarding fee of manufacturing, it became Rs. 4739, Rs. 1360 and Rs. 956 beneath Tulsi, Soybean and Maize crop respectively. The statistics discovered that the net income turned into expected to be Rs. 40720, Rs. 21325 and Rs. 14963 for Tulsi, soybean and Maize crop respectively. It clear cut indicates that 37 to fifty two percentage greater profits benefit from Tulsi crop than the soybean and maize crop by way of the sample farmers. As a ways as the B.C. Ratio became worried it was envisioned to be 1:1.99, 1:1.97 and 1:1.43 for Tulsi, soybean, and maize crop respectively, which shows that the Tulsi crop changed into greater profitable than their competitive plants.

\*Corresponding author: E-mail: chouhan.savita9@gmail.com;

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## 1. INTRODUCTION

India has a rich variety of medicinal and aromatic plants; more than 8000 species of wild flowers are recognized to be used in India for remedy of diverse fitness issues [1]. Madhya Pradesh is rich in medicinal and aromatic plants, affords a major source of income for a large number of humans derive employment from the collection of seeds, processing of produce and alternate of medicinal and aromatic plants. Importance of medicinal plants are broadly customary, there may be a serious lack of complete records at the economically critical and threatened species of Madhya Pradesh [2,3]

The distinct agro-weather zones of Madhya Pradesh are the maximum suitable for cultivation and boom of medicinal and aromatic crops. The kingdom is herbal habitat for over 50 percentage of the herbs utilized in pharmaceutical industry. The predominant flowers richly located within the nation include Aonla, Bael, Tulsi, Ashwagandha, Isabgol, Chandrasur, Kalmegh, shatawar, Keokand, Safed Musli, and Bach [2,3]. Currently approximately 10 thousand farmers are worried in cultivation of medicinal plants [4]. The production of medicinal and aromatic plant life inside the nation in 2004-05 changed into 20,000 tonnes and is envisioned to rise to 40,000 tonnes now [1]. About four hundred small herbal processing devices are purposeful. Some primary minor forest produce cooperative societies are generating Ayurvedic medicines, nutritious food and drinks. Contract farming, contract series area with forest committees, setting up large processing devices and collective manufacturing and branding of merchandise are the important thing regions to be tapped [5]. A strive has been made on this take a look at to assess the price and go back of Tulsi and its aggressive vegetation in Malwa Plateau region of Madhya Pradesh [2].

## 2. RESEARCH METHODOLOGY

Malwa plateau of Madhya Pradesh turned into decided on for have a look at motive as this location blanketed greater region of the Medicinal and Aromatic plants. Under Malwa Plateau, three districts namely Ratlam (5040 hac.), Mandsaur (7885 hac.) and Neemuch (10961 hac.) were decided on the basis of maximum location protected by means of decided on Medicinal and Aromatic plants (2014-15) [2,3] After selection of

districts, two blocks purposively Ratlam and Jaora underneath Ratlam district, Mandsaur and Malhargarh beneath Mandsaur district and Neemuch and Jawad in Neemuch district had been selected on the premise of identical criteria as selected the districts. From each selected blocks a list of villages the ones having the region of Tulsi crop turned into organized and out of which five villages from each decided on block were decided, on the premise of highest vicinity included through Tulsi. After selection of villages, a list of farmers' folks that raised Tulsi crop in commercial foundation becomes organized and forty five farmers had been selected randomly.

## 3. RESULTS AND DISCUSSION

### 3.1 General Characteristics of Farmers

The size of own family became one of the vital element which influencing the cultivation of Aromatic Plants. It became found that overall quantity of circle of relatives participants changed into 216 and forty four and 56 percentage of male and lady to the full wide variety of member of the family was discovered. The average circle of relative's size was observed five. As consistent with caste smart distribution of pattern respondents, majority (seventy one percent) of respondents belong to OBC class accompanied by using trendy (18 percentage), SC (nine percentage) and ST (2 percentage) [3].

It found out from the desk that extra variety of pattern farmers become belongs to the middle age group (52 percent), followed by way of old age (24 percent) and young age institution (24 percent) of sample farmers. It changed into also located that 56 percent sample farmers had been knowledgeable up to primary stage observed by way of better secondary school (31 percentage) and underneath commencement (thirteen percentage) level. All the sample farmers had been literate, so education generates cognizance and also helpful to motivates them for cultivation of Aromatic plant (Tulsi) within the examine area [3].

### 3.2 Estimation of Fee and go back of Tulsi and its Aggressive Crops

The sample farmer elevating Tulsi together with its aggressive crops i.e. Soybean and Maize, so the fee and go back of Soybean and Maize additionally analysed then it'll be helpful to recognize the profitability of Tulsi and their aggressive crop. The details are given in Table 2.

**Table 1. Family structure and caste of sample farmers.**

(Unit: No.)

No. of Farmers	Family Size		Total family member	Average family members	Caste				
	Male	Female			SC.	ST.	OBC.	Gen.	Total
45	94 (44)	122 (56)	216 (100)	5	4 (9)	1 (2)	32 (71)	8 (18)	45 (100)

**Table 2. Age and education level of sample farmers:**

(Unit: No.)

Name of crop	Young (upto 35 years)	Age Group Middle (36 to 50 years)	Old (Above 50 years)	Total	Educational Level				
					Primary	HSSc	UG	PG	Total
Tulsi	11 (24)	23 (52)	11 (24)	45 (100)	25 (56)	14 (31)	6 (13)	-	45 (100)

**Table 3. Cost of in cultivation of Tulsi crop and its competitive crop**

(Unit: Rs./hac.)

Sl. No.	Particulars	Tulsi	Soybean	Maize
(A) i.	Hired human Labour	9176.21	4059.64	9456.14
ii.	Machine Labour	3286.68	1024.37	4523.82
iii.	Value of seed	1015.38	3254.74	2457.89
iv.	Value of manure and fertilizer	4135.94	6982.14	2168.42
v.	Irrigation Charges	2037.36	493.80	2489.15
vi.	Depreciation Charges	1593.17	386.14	386.14
vii.	Land revenue & Taxes	135.52	32.84	190.87
viii.	Interest on working capital @ 5%	1030.82	177.39	155.45
	Cost A1&A2	22411.08	16411.06	21827.88
B.	Interest on fixed capital excluding land @ 10%	433.94	25.49	1089.33
	Cost B1	22845.02	16436.55	22917.21
C.	Rental value of owned land	12887.67	3028.12	7322.80
	Cost B2	35732.69	19464.67	30240.01
D.	Imputed value of family labour	1367.69	437.25	1073.67
	Cost C1 (cost B1 + imputed value of family labour)	24212.71	16873.80	23990.88
	Cost C2 (Cost B2 + Imputed Value of Family Labour)	37100.38	19901.92	31313.68
	Cost C3 (Cost C2 + 10% of cost C2)	40811.31	21892.11	34445.04

It was observed that the overall fee (Cost C3) of Tulsi, and its aggressive vegetation i.e. Soybean and Maize was envisioned to be Rs. 40811.31, 21892.11 and 34445.04 [1,3,4,5] respectively. Major portion of overall expenses protected with the aid of price A1 in all of the crops institution and it became fifty four, Ninety one, seventy five and sixty three percent to total value (C3) underneath Tulsi, Soybean and Maize crop respectively. But in case of Soybean crop it becomes 70.71 percentage [6]. The variant in price A1 under special plants was found the version may be due to difference in employed human labour prices [3,5]. The Soybean crop required greater human labour charges for the different operations compared to the other plants. The hobby on constant capital became located

vary among Maize, Soybean and Tulsi crop respectively. The variation may be due to makes use of extraordinary kind of implements by way of the pattern farmers. The variation inside the condominium price of owned land below Tulsi and its competitive crops have been discovered and the version may be because of distinction in amount of gross earnings [3,6].

It concluded that the maximum (Rs. 40811.31) and minimum (Rs. 21892.11) general value of cultivation become determined underneath Tulsi and Soybean crop respectively. Overall it could be concluded that extra finances are required for raising Tulsi crop than their competitive crop in the take a look at location [1,3,5].

**Table 4. Profitability aspects of Tulsi Aromatic crop**

(Unit: Rs./hac.)

Particulars	Tulsi	Soybean	Maize
Gross Income	81531	43217	49408
Gross Expenses	40811.31	21892.11	34445.04
Net Income	40719.69	21324.89	14962.96
Farm Business Income	59119.92	26805.94	21580.12
Family Labour Income	45798.31	23752.33	13167.99
Cost of Production	4738.87	1360.29	955.73
BC Ratio	1:1.99	1:1.97	1:1.43

It discovered from the table that the net earnings changed into anticipated to be Rs. 40720, 21325 and Rs. 14963 for Tulsi, soybean and Maize crop respectively [7-9]. It clear reduce suggests that 37 to fifty two percent more profits gain from Tulsi crop than the soybean and maize crop by way of the pattern farmers. Regarding the end result of farm commercial enterprise earnings, it suggests that each one the plants have been profitable but Tulsi crop changed into more profitable than its competitive crops [7-10]. As below farm commercial enterprise earnings taken into consideration handiest actual charges incurred by means of producers. The circle of relatives' labour earnings become also indicates positive for all of the vegetation, with the consideration of various profitability elements inside the study place. So, efforts are required to encourage the farmers to extended more vicinity beneath Tulsi in the present cropping sample by the pattern farmers than there profits may be stronger upto some expand and monetary conditions and widespread of residing of the farmers can be improved inside the take a look at vicinity.

As a ways as the B.C. Ratio changed into worried it was envisioned to be 1:1.Ninety nine, 1:1.97 and 1:1.Forty three for Tulsi, soybean, and maize crop respectively, which suggests that the Tulsi crop was extra profitable than their aggressive vegetation [9,10].

Over all it could be concluded that Tulsi crop changed into more worthwhile than their aggressive crop [9]. So, efforts are required to motivate the farmers to boom greater vicinity below Tulsi inside the existing cropping sample via the sample farmers than there profits can be stronger upto a few make bigger and monetary conditions and trendy of dwelling of the farmers may be advanced in the take a look at vicinity.

#### 4. CONCLUSION

The region of Tulsi crop can be expand within the current cropping pattern as this crop suggests

extra worthwhile than its competitive plants. It will be useful to enhance the profits in addition to popular of dwelling of the farmers. So, it additionally provides employment opportunity with the aid of raising this crop. Training programmes for technical steering for package of practices and submit harvest control of Tulsi crop may be behaviour time to time and offer the guidance and literature by using the involved agencies. The planting cloth additionally ought to be made to be had by means of the worried branch/groups in due time, it will helpful to enhance the place as well as productiveness of Tulsi crop inside the take a look at place as uses of this crop increases due to huge demand in the pharmaceuticals and cosmetic industries.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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