

Original Research Article

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## Economics of Turmeric Production and Farmers Perception on New Marketing Method in Samastipur District of Bihar

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### ABSTRACT

#### Keywords

Turmeric, Cost of cultivation, Farmers market intermediaries, Constraints

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Turmeric is an invaluable spice crop which has huge economic importance in the farm economy as well as Indian economy. India ranks at first place in turmeric production having around 80% of total share in world. Southern states of India Telengana, Andhra Pradesh, Tamil Nadu are major producer of turmeric in Indian states. The present study was conducted in Samastipur district of Bihar with having an objective to find out economics of turmeric production and to find out the perception of farmers and retailers on marketing tie to increase farmer's income. Cost of cultivation of turmeric was Rupees 53700 (avg.) in which two main contributor are Manure and fertiliser with percentage share of 37 & 22 respectively. Net return to farmer was Rupees 56300. Cost of production per Kg was 4.88 Rupees & Net Return per Kg was rupees 5.12. Three different marketing channels were followed by farmers based on number of market intermediaries in the marketing chain. It was observed that fixing fair price for turmeric per year is the key issue which framers wanted to be resolved from this tie up marketing model and retailer want regular supply of turmeric into the market. Lack of co-ordination among producers to increase their bargaining power & lack of market intelligence are two most important constraints faced by the farmer in marketing and production of turmeric.

### Introduction

Spices play a role of major ingredient in the food cooked and consumed everyday around the world. Every spice owns a unique flavour and essence, and its addition or removal can literally make or break a dish. There are several spices used in our day to day cooking; the popular ones include cumin, turmeric, black pepper and coriander seeds. In search of exotic spices, India attracted traders from remote parts of the world in the ancient times.

Many of them went back with their share, while some even settled down and brought in some of their home-grown spices. Such is the role of spices in Indian culture. Spices are known to have several health benefits; in fact, it's the addition of a bouquet of spices that make traditional Indian home-cooked food one of the healthiest meals eaten around the world. A spice comes with numerous nutritional values and provides some major health benefits. In recent years, the commercial value of spices in terms of direct

consumptions and processing as well as trade and economic status has grown substantially and increased. Most of the spices generate good employment opportunities as well due to high labour intensity in its production. Turmeric (*Curcuma Longa* L.) known as 'Indian Saffron' is an important and the ancient and sacred spice grown commercially in India. It is also known as the 'Golden Spice of life' and is one of the most essential spices used as an important ingredient in culinary all over the world. Turmeric is grown only in 6% of the total area under spices and condiments in India.

India ranks first in the list of largest producer, consumer and exporter of turmeric in the world. Because of high curcumin content, Indian turmeric is considered as the best in the world market (Table 1 and 2). India accounts for about 80 per cent of world turmeric production and 60 per cent of world exports. Major turmeric exporting countries includes India, Thailand, Taiwan, and several other Southeast Asian, Central and Latin American countries.

The producer's share in consumer's rupee is lower in traditional channels than in the supermarket channels and also the net price received by the farmers. The supermarket channel has been found more effective than the traditional channels. Government involvement is required to create a policy situation that may ensure an equally beneficial relationship between the farmers and the organized sector (Aparna and Hanumanthaiah, 2012). In a study on the participation of small-scale vegetable farmers in modern retail market channels, younger farmers with irrigated land, higher levels of education, possessing wrapping equipment and storage facilities, located near concreted roads mostly participated in the supermarket channel. The small farmer participation in the supermarkets can improve their income (Adil et al. 2007).

In a study by Birthal et al. (2007) on linking farmers to markets for high-value agricultural commodities, opportunities have been explored of linking smallholders to markets through institutions such as cooperatives, growers' associations and contract farming that reduce marketing costs, transaction costs and some of the production constraints. Smallholders need to participate and make a substantial contribution to the production of high value food commodities, but their links to markets are not strong. However market institutions like cooperatives, contract farming and growers' associations do not altogether take no notice of smallholders and some policy support is essential to strengthen their linkages with the markets.

This study was conducted with following objectives which are as follows to study the economics of turmeric production in Samastipur district of Bihar and to explore opportunity for increasing farmers income.

### **Materials and Methods**

Samastipur district was purposively selected for the present study. Out of total twenty blocks of Samastipur, five blocks are selected where turmeric was produced majorly by the farmers. Twenty farmers from each block are selected for the study and in addition to that nine turmeric wholesaler and ten retailers which include FPO, wholesale markets and spices market were studied. Percentage analysis, cost of cultivation analysis, Likert scaling technique and Garrett's ranking technique was used in this study to draw meaningful results. Constraints perceived by the respondents were prioritized by using Garrett's ranking technique by using the following formula:

$$\text{Percent position} = 100 (R_{ij} - 0.5) / N_j$$

Where,

$R_{ij}$  = Rank given for the  $i$ th variable by  $j$ th respondents

$N_j$  = Number of variable ranked by  $j$ th respondents

With the help of Garrett's Table, the percent position estimated is converted into scores.

The percentage position of each rank was converted into score using Garrett's table. For each constraint, score of individual respondents were added together and were then divided by the total number of respondents for whom the scores were added. Thus, the ranking was done on the basis of the mean score after arranging it in descending order.

## **Results and Discussion**

### **Economics of turmeric production**

To understand the economics of turmeric production in Samastipur district of Bihar, cost of cultivation is discussed in this section. Out of 100 farmers which are selected for the study, 23 farmers have small landholding, while 56 farmers have marginal land holding and rest 21 were large farmers. Most of the farmers growing turmeric belong to small and marginal so and growing turmeric in just 1 or 2 acre of land area so data was represented on acre basis instead of hectare.

The variety which is grown by farmers is Rajendra Sonia, having curcumin content 7-8%. Component wise cost of cultivation of turmeric is shown in (Table 3). The average cost of cultivation is 53700 per acre during the year 2019. Organic manure is having the highest percentage contribution in total cost of cultivation having a share of 37% of the total cost. Fertilisers are the second most costly item having a share of 22% and then followed by labour charges which contribute 19% of the total cost. Planting material i.e.

Rhizomes costs around 19% and least contribution is added by plant protection chemical with only 3% of share in cost of cultivation of turmeric.

The above (Table 4) represents summary of output and returns. And total cost of cultivation is Rs. 53700, and average production is 110 quintal per acre. The rate at which farmers sell is 1000 rupees per quintal, so gross returns are 110000 per acre and while net returns are 56300. Cost of production for per Kg of turmeric is 4.88 Rupees and net returns per Kg are 5.12 Rupees.

### **Marketing practices followed by farmers**

The sample respondents are selling their produce by two main ways. In first method farmers are directly selling turmeric produce to the buyer and in second method farmer are boiling turmeric in their house in water and after washing and sun drying, farmers are selling boiled turmeric to buyer. We have selected those farmers only those farmers who are using the first method to sell their produce. And consumers are the buyers who buy dried turmeric and grind it at their home to make turmeric powder to consume it. The sample farmers are selling turmeric through three marketing channel.

As it is clear from the below (table 5) that in channel I, farmers sell their produce from their house only as village trader approach them to buy their produce. In this marketing channel intermediaries involved were village traders, wholesaler and retailers. In Channel II, farmer directly sells the produce to retailers who finally sells to consumer here no other market intermediaries is involved. In channel III, farmers sell their produce into wholesale market of spices and then wholesaler sells it to retailers and then retailer sends it to consumer.

The details of price prevailing in different marketing channels of turmeric are shown in above (table 6). Farmer receives highest amount of money i.e. is 68.6% in channel II for turmeric as only one market intermediaries is present in this channel, followed by channel III, where farmers receives 53.1% of money as they sell produce to wholesalers which further sells it to retailers. And at last in channel I, farmer only receive 31.3% share of retailers' money due

to more number of market intermediaries present in this channel. By elimination of market intermediaries and also consent price agreement between farmers, consumers and retailers can have an improvement in their income. And the market linkage or tie up arrangement between farmers and retailers were made then the price received by the farmer and the retailers both will be benefitted (Ghosh, 2013; Barakade *et al.*, 2011).

**Table.1** Country wise production of Turmeric in world

S. No.	Country	Production inMT	PercentageShare
1	India	1133000	80%
2	China	113300	8%
3	Myanmar	56650	4%
4	Nigeria	42487.5	3%
5	Bangladesh	42487.5	3%
6	Others	28325	2%

**Table.2** State wise Production of turmeric in India (2017-18)

S. No.	State	Production (000 Tonnes)	Sr. No.	State	Production (000 Tonnes)
1	Telangana	294.56	10	Assam	19.17
2	Maharashtra	190.09	11	Meghalaya	16.5
3	Tamil Nadu	116	12	Nagaland	10.19
4	Gujarat	78.91	13	Tripura	10.08
5	Orissa	54.5	14	Kerala	8.82
6	West Bengal	45.5	15	Punjab	3.19
7	Madhya Pradesh	39.05	16	Bihar	2.83
8	Mizoram	29.82	17	Uttarakhand	1.74
9	Haryana	22	18	Others	3.7

Source:-APEDA

**Table.3** Cost of cultivation of sample farmers (Rs/Acre)

Cost of Cultivation		
S. No.	Particulars	Total Value (in Rs.)
1	Area	1 Acre
2	Cost of Rhizomes	10000 (19)
3	Organic Manure	20000 (37)
4	Fertiliser (All)	12000 (22)
5	Plant Protection Chemicals (All)	1500 (3)
6	Labour Charges	10200 (19)
7	Total Cost of Cultivation	53700 (100)

Figure in parenthesis indicates per cent of total

**Table.4** Summary of output and returns (cost & returns in Rs. / Acre)

S. No.	Particulars	Amount (inRs.)
1	Total Cost of Cultivation	53700
2	Avg. production quintal/acre	110
3	Gross return @1000 per quintal	110000
4	Net Return	56300
5	Cost of production per Kg	4.88
6	Net Return/ Kg	5.12

**Table.5** Different marketing channels followed

Channel 1								
Farmers	→	Village traders	→	Wholesaler	→	Retailers	→	Consumer
Channel 2								
Farmers	→			Retailers	→			Consumer
Channel 3								
Farmers	→	Wholesaler	→	Retailers	→			Consumer

**Table.6** Price prevailing in different marketing channel for Turmeric

Players/Channel	Channel I	Channel II	Channel III
Farmers Price	313 (31.3)	688 (68.6)	531 (53.1)
Village trader price	406	-	-
Wholesalers price	531	-	781
Retailers price	1000	1000	1000

**Table.7** Procurement pattern followed by retailers

Procurement pattern	No. of retailers	Farmer (%)	Wholesaler (%)	Commission Agent (%)
Farmers and Commission	4	25	-	75
Wholesalers	1	-	100	-
Farmers and Wholesalers	5	80	20	-

**Table.8** Farmers Perception on Tie up Marketing of Turmeric

S. No.	Statement	Respondents (n=100)	
		Mean Score	Rank
1	Fixing fair price for turmeric per year	4.10	I
2	Procurement centres at common place	3.71	II
3	Acceptance of produce during glut season	3.61	III
4	Immediate cash payment	3.55	IV
5	Regular procurement	3.49	V

**Table.9** Retailers' perceptions on Tie up Marketing of Turmeric

S. No.	Statement	Respondents (n=10)	
		Mean Score	Rank
1	Regular supply	4.4	I
2	Supply of required quantity	4.1	II
3	Reasonable price agreement	3.9	III
4	Collection points at commonplace	3.6	IV
5	Supply of graded or quality produce	3.1	V

**Table.10** Constraints faced by the farmers in marketing and production

S. No.	Constraints	Respondents (n=100)	
		Mean Score	Garrett's Ranking
1	Lack of co-ordination among producers to increase Their bargaining power	84.16	I
2	Lack of market intelligence	83.20	II
3	Exploitation by middlemen	82.43	III
4	Lack of near by marketing centre	82.26	IV
5	Damage by pest & disease	80.46	V
6	Absence of Govt. intervention to market the produce	78.35	VI
7	High cost of cultivation	70.43	VII

**Procurement pattern followed by sample retailers**

It could be observed from Table 7, major procurement source of the retailers were wholesalers, commission agent and from farmers. Retailers (4) procured from farmers and commission agent relied more on purchase from the commission agents in the markets and procure less from the farmers, whenever the farmers supplied the turmeric directly to the retail shop. Retailers (1) procured from wholesalers only in the spices markets. Retailers (5) procured from farmers and wholesalers relied more on purchase from the farmers in the markets and procure less from the wholesalers.

Hence it could be concluded that the initiation of linkages between farmers and retailers leads to the better relationship and can improve the income level of both of them.

**Farmers perception on tie up marketing of turmeric**

In this portion, farmers were asked to rank five statements according to their perceptions on the marketing of turmeric using the Likert

scaling technique (Five-point scale). The results on farmers' perception about the tie-up marketing of turmeric is presented in Table 8

It could be inferred from the Table 8, that fixing fair price for turmeric per year was ranked 1st with a mean score of 4.10 followed by procurement centres at commonplace (mean score 3.69), acceptance of produce during glut season (mean score 3.61) and immediate cash payment (mean score 3.55) with 2nd, 3rd and 4th rank, respectively. Regular procurement (mean score 3.49) was ranked 5th. Hence it was concluded that fixing a fair price for vegetables per year is the most important statement of farmers perceived about the marketing methods. So, the retailers have to improve the tie up marketing methods in rural area to fix a reasonable price for promoting the market tie-up model (Mishra *et al.*, 2004)

**Retailers' perceptions on Tie up Marketing of Turmeric**

Retailer's perceptions about the tie-up marketing of turmeric were measured and their perceptions on this marketing method are discussed in this section. In this study,

retailers were asked to rank five statements according to their perception of tie-up marketing of turmeric using a Likert scaling technique (Five-point scale). The results on retailer's perception about the marketing of turmeric were presented in Table 9.

It could be inferred from the Table 9, that regular supply was ranked 1<sup>st</sup> with a mean score of 4.3 followed by the supply of graded or quality produce (mean score 4.1) and reasonable price agreement (mean score 3.9) 2<sup>nd</sup> and 3<sup>rd</sup> rank, respectively. The least mean score in marketing tie ups comes to collection points at commonplace (mean score 3.6) was ranked 4<sup>th</sup> and supply of graded produce at 5<sup>th</sup> place with mean score 3.1. Hence it was concluded that regular supply was the most important statement of retailers' perception about the tie-up marketing methods. Farmers' need to organize into groups or by FPO's to improve the marketing tie-up models for turmeric. (Ferris et. al 2014)

### **Constraints faced by the farmers in marketing and production**

The constraints faced by sample respondents in marketing and production of turmeric were analysed using Garrett's ranking technique and results are presented in the Table 10.

It could be inferred from the Table 10 that the lack of coordination among producers to increase their bargaining power was ranked 1<sup>st</sup> with a mean score of 84.16 followed by lack of market intelligence with mean score 83.20 and exploitation by middlemen at 3<sup>rd</sup> place and mean score 82.43. Exploitation by middlemen, lack of nearby markets, pest and disease problems, no government intervention like fixing prices for spices, high cost of cultivation followed in that order. It is concluded that lack of coordination among producers to increase their bargaining power

is the most important problem perceived by farmers in marketing.

The present study has analysed that total cost of cultivation of turmeric was Rs. 53700 and Net returns per acre basis are 56300. Three marketing channels were used by the farmers. Farmers receives highest price of consumer rupees i.e. is 68% in channel II as there was only one market intermediary retailers was present. If market linkage and tie up arrangement between farmers and retailers were followed by both then the price received by the farmers will be high and it's beneficial for both of the farmer. Fixing fair price every year and establishing procurement centre at common points is the most important statement of farmer's perception for this marketing tie up. Collection point at common point and supply of graded and quality produce are most important statement of retailer's perception regarding this tie up marketing. It was concluded that to promote this marketing tie up there is a need of improvement in awareness level of farmers, creating collection points at different places and fixing fair prices every year is a consent for both of retailers and farmers as major suggestion for starting of this marketing tie up. The other way can be to establish an FPO by all the turmeric growers of the different blocks and selling it then direct to consumers.

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