

## Influence of Market Arrival on Price Formation of Turmeric in Kandhamal District of Odisha

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### I. Introduction

Turmeric is grown as a Kharif crop in India. The crop-harvesting season starts between end of January and March in India. The country is the leading producer, consumer and exporter of turmeric in the world. It has near monopoly in this commodity. Indian turmeric has been known to the world since ancient times. India accounts for 78% of world turmeric production and it contributes 60% to the world market. Major turmeric growing states are Andhra Pradesh (57%), Tamil Nadu (23%), Karnataka (6%) and Orissa (4%). Indian turmeric is considered as the best in the world because of its high curcumin content.

#### Crop seasonality

Turmeric is a 8-9 months crop. The main harvest season begins from end of January and extends up to March. Turmeric is harvested when leaves turn yellow and start drying up. In harvesting, the whole clump is lifted out with the dry plant, then the leafy tops are cut off, the roots are removed, all the adhering mud particles are shaken or rubbed off and the rhizomes are then washed well with water. The fingers, sometimes called the daughter Rhizomes are separated from the mother rhizomes and kept in shade for 2-3 days.

#### Crop calendar

Planting is done either on raised beds or on ridges during June. The crop-harvesting season starts between end of January and March in India. It starts entering into the market by March. The peak arrivals season is between March and April.

#### Turmeric crop calendar

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Turmeric												

Harvesting period	
Sowing period	
Peak Arrivals	

The main turmeric producing states in India are Andhra Pradesh, Tamil Nadu, Orissa, Karnataka, West Bengal, Gujarat and Kerala. Maximum area under turmeric cultivation is in Andhra Pradesh (69.9 thousand ha), where production is very high ie.518.5 thousand tons. Then comes Tamil Nadu (area 25.9 thousand ha and production is 143.3 thousand tons), followed by Orissa and West Bengal (area is 24.0 thousand ha and 11.8 thousand ha respectively whereas production is 57thousand tons and 25 thousand tons respectively.

Turmeric prices will be hovering lower between January and June. This could be mainly

Attributed to supply pressure due to new crop arrivals. New crops arrivals of turmeric gradually increase from January onwards and peaks in the month of March. Turmeric is available in the markets almost throughout the year.

The turnover of turmeric in Indian market is estimated to be in between Rs.2500 and Rs.3000 crore annually. The major trading centers are: Nizamabad, Duggirala and Kadapa in Andhra Pradesh, Sangli in Maharashtra and Salem, Erode, Dharmapuri and Coimbatore in Tamil Nadu.

However, Odisha is a major producer of turmeric even though it does not figure well in the turmeric market of india. In odisha kandhamal district is the major producer of some of the finest forms of turmericis . But it is not the terminal market center for turmeric. In the district, about 12,000 hectare is diverted for turmeric cultivation and dry haldi weighing 10,000 metric tonne is produced every year. Kandhamal haldi is famous for its colour, texture, aroma, flavour and long shelf life. The curcumin content in it is claimed to be the highest in the country, to be recognised soon by the Union Control of Holland, a certifying agency engaged to certify its purity. The produce is known as Kandhamal turmeric and it has the best international certification of organic quality. The turmeric business in the district is worth Rs.300 million.The cultivators are mostly tribal who have been producing turmeric for generations.

**Kandhamal District** was declared as an independent District. On 01-04-1994 With Sub-divisions ; Kandhamal (2018 Sq.Miles) and Balliguda (562 8Sqr.KMs.) with Tehsils. (a) Phulbani (10 Circles) (b) Balliguda (8 circles) (c) G.Udayagiri (12 circles) (d) Daringbadi

The district of Kandhamal, hilly habitat of “Kondhas” (ahill tribe, classified under the ancient Gondic race of proto-Austroloid group) lies between latitude of 19<sup>o</sup> 34’ and 20<sup>o</sup> 50’ North and longitude of 80<sup>o</sup> 30’ and 84<sup>o</sup> 48’ East with almost 66 % of the land area covered with intensive forest and towering mountains. The district is spread over 8021 square kilometers with elevation ranging from 300 to 1100 meters above the mean sea level. The mean maximum temperature is 43.5 ° C and mean minimum temperature is 5° C. The average annual rainfall is 1522.95 mm in 86 rainy days which is mostly received from June to October.

An humble attempt is made through this paper to examine the relevance of market arrival of turmeric in price formation in Kandhamal district. For the purpose basically two factors are taken ; arrival of turmeric in quintal and price in rupees per quintal in Kandhamal District from January 2013 to September 2013. Price is considered as the dependent variable and Arrival of turmeric in the markets of Kandhamal district is considered as the independent variable . Simple regression is used to see the model fit. It is of common contention that the price provides an incentive to the producers to increase the level of production if it is remunerative. But it is observed that market arrival for some reason or the other is not regulated by price. Hence market arrival irrespective of the level of production stands independent of price. Therefore the researcher tries to know the relative influence of market arrival of turmeric in Kandhamal District, a backward tribal district of Odisha on it’s price. It may be mentioned here that market arrival can be regulated by state intervention and control of the different variables influencing the market arrival.

## II. Review Of Literature

**Steven M. Helfand, Edward S. Levine; Agricultural Economics, volume 31, Issues2-3, December2004; Farm size and determinants of productive efficiency in the Brazilian center –West.**

This paper explores the determinants of technical efficiency and the relationship between farm size and efficiency in the center west of Brazil .The efficiency measure is regressed on a set of explanatory variables which includes farm size, type of land tenure, composition of output, access to institutions and indicators of technology and input usage. The relationship between farm size and efficiency is found to be non linear .

**Farhad Lashgarara, Roya Mohammadi and Maryam Omidi Najafabadi; African Journal of Biotechnology Vol. 10(55), pp. 11537-11540, 21 September, 2011; Identifying appropriate information and communication technology (ICT) in improving marketing of agricultural products in Garmsar City, Iran.**

This study is aimed to identify ICT capabilities in marketing the agricultural products of Garmsar city. This is an applied study and the research methodology is correlation. The statistical population of the study was 109 agricultural experts and extension agent working in agricultural service centers. Descriptive results show that the situation of agricultural products marketing is fairly desirable. ICT also have a moderate role in the improvement of agricultural products marketing. Regression analysis results indicate that computer, electronic journals, website and mobile determined about 14% variance of agricultural products marketing.

**Marshall, E., Schreckenberg, K. and Newton, A.C. (eds) 2006. Commercialization of Non-timber Forest Products: Factors Influencing Success. Lessons Learned from Mexico and Bolivia and Policy Implications for Decision-makers. UNEP World Conservation Monitoring Centre, Cambridge, UK. A Banson production Graphic design: John Carrod Production editors: Karen Eng, Helen de Mattos Printed by Cambridge Printers, UK © UNEP World Conservation Monitoring Centre, 2006 ISBN 92-807-2677-3**

The term non-timber forest product (NTFP) encompasses a very wide range of forest products and marketing systems, and has been defined variously by different people (Belcher 2003). This study uses the definition provided by de Beer and McDermott (1989), which states that ‘NTFPs encompass all biological materials, other than timber, which are extracted from forests for human

use.’ This research was conducted in regions of tropical montane, rain and dry forest, including relatively intact primary forest, secondary regrowth and more managed field and fallow environments. Examples of NTFPs include fruits, nuts, seeds, oils, spices, resins, gums and fibres, which contribute, in a raw or processed form, to rural livelihoods by improving food security and health.

Many NTFPs are commercial products that can make a significant contribution to the cash economy of households. Individual forest products may be processed into one or more marketed products, and traded through a variety of different value chains. Commercialization is defined as the entire process from production, through collection or cultivation, to sale of a product in exchange for cash, or sometimes for barter, resulting in the product leaving the community of origin.

**Journal of Farm Sciences 1(1) : 69-74, 2011** Behaviour of market arrivals and prices of tomato in Selected markets of north India RAVINDER SHARMA Department of Social Sciences, College of Forestry,

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The paper examines the behaviour of market arrivals and prices of tomato and their nature of relationship in selected markets over the years. It has been found that both market arrivals as well as prices of tomato have shown increasing trends in all the markets during 1991 to 2003. The seasonality in prices of tomato was higher than the seasonality in market arrivals in all the selected markets emphasizing the improvement in the production and protection technologies and imperfection in markets and marketing system of tomato. The selected markets were also not found integrated as shown by the monthly price variations across the markets. The lagged price is an important factor in determining the current price than the market arrivals.

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**Vol.3, No.7, 2012 Price trend and integration of wholesale markets for onion in metro cities of India**

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Availability of market intelligence on various aspects like the potential markets, quantity arrived and prevailing

and expected prices in different regions during different months of the year are important in mitigating many of market related problems. Study reveals that there was high variability in the arrival of onion in the month of March and April in selected markets. Among the markets, the coefficient of variation in both arrivals and prices were found to be higher in Ahmadabad and Kolkata. The zero order correlation matrix between two markets average wholesale prices of onion indicated the high integration among the selected markets except Ahmadabad with Mumbai market. This might be due to the movement of produce from one market area to another depending

upon price prevailed in the markets. The competitive conditions prevailing in the selected markets might have influenced the movement of prices in the same direction. The magnitude of regression coefficient revealed that an increase in market arrivals by a MT in a month led to an increase in prices by Rs.6.00/MT and Rs. 0.40/MT in Bangalore and Delhi markets respectively. On the contrary, prices of onion decreased in Ahmedabad (Rs. 6.00), Mumbai (Rs. 10.00) and Kolkata (Rs. 2.00) markets with increase in arrivals by one MT in a month.

### **Objective**

The study addresses the following objectives.

1. To study the causal relationship between price and arrival in the markets of kandhamal district.
2. To study the impact of price on market arrival.

### **Hypothesis**

**$H_0 : \beta = 0$**

**$H_1 : \beta \neq 0$**

### **III. Research Methodology**

Type of study: Empirical

Area of study: Kandhamal District

Data type : Secondary Data

Source: APMC'S Main Menu

Analysis: Simple linear Regression, t-test for hypothesis testing

**Data on Wholesale Price of Turmeric and Market Arrival in Kandhamal District from January 2013 to September 2013**

Month	Arrival in Quintal(in the wholesales market)	Wholesales price in rupees per Quintal
January	292	4609.25
February	377	4427.32
March	1006	4704.11
April	1166.5	4976.24
May	998.5	4822.32
June	742	4356.36
July	244	4069.36
August	109	4094.95
September	478	3992.2

As per data reported by APMC's Main Menu

**Regression**

**Descriptive Statistics**

	Mean	Std. Deviation	N
PRICE	4450.2344	352.7204	9
ARRIVAL	601.4444	386.0051	9

**Correlations**

		PRICE	ARRIVAL
Pearson Correlation	PRICE	1.000	.788
	ARRIVAL	.788	1.000
Sig. (1-tailed)	PRICE	.	.006
	ARRIVAL	.006	.
N	PRICE	9	9
	ARRIVAL	9	9

**Variables Entered/Removed<sup>a</sup>**

Model	Variables Entered	Variables Removed	Method
1	ARRIVAL <sup>b</sup>	.	Enter

a. All requested variables entered.

b. Dependent Variable: PRICE

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df 1	df 2	Sig. F Change
1	.788 <sup>a</sup>	.621	.566	232.2662	.621	11.449	1	7	.012

a. Predictors: (Constant), ARRIVAL

b. Dependent Variable: PRICE

**ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	617660.6	1	617660.587	11.449	.012 <sup>a</sup>
	Residual	377633.1	7	53947.582		
	Total	995293.7	8			

a. Predictors: (Constant), ARRIVAL

b. Dependent Variable: PRICE

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	4017.290	149.551		26.862	.000	3663.658	4370.922
	ARRIVAL	.720	.213	.788	3.384	.012	.217	1.223

a. Dependent Variable: PRICE

**Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4095.7524	4856.9849	4450.2344	277.8625	9
Residual	-369.1740	381.7665	9.600E-13	217.2651	9
Std. Predicted Value	-1.276	1.464	.000	1.000	9
Std. Residual	-1.589	1.644	.000	.935	9

a. Dependent Variable: PRICE

#### IV. Interpretation Of Regression Results

The last column of ANOVA shows the goodness of fit of the model. The lower this number, the better the fit. Looking at the model fit ("ANOVA") for checking the goodness of fit we may conclude that the model is a good fit as the significant value is less than 0.05.

The "Adjusted R-Square" shows that 56.6% of the variance was explained. The "R-Square" tells us that 62.1% of the variation was explained.

The table "Coefficients" provides information on the effect of individual variables (the "Estimated Coefficients"--see column "B") on the dependent variable and the confidence with which we can support the estimate for each such estimate (see the column "Sig."). As the significant value is less than 0.05, the null hypothesis is rejected and we can assume that our estimate is reliable with a 95% level of confidence. It can also be concluded that there is a linear relationship between price and arrival.

#### V. Conclusion

The statistical analysis explains that the market arrival has a great impact on price formation. This impact is explained by an inverse relationship between market arrival and price. It is a well known fact that the agriculturist particularly the small and marginal farmers and tenant cultivators have a weak bargaining strength and very low retention power. They cannot sustain withholding the surplus stock even for a week after harvesting. Many reasons are attributed for this distress sale such as lack of storage, low level of pecuniary income, a disrupted income flow, current social obligation, and indebtedness to the unauthorized money lenders or village mahajanias, proper infrastructure, lack of all weather transport and inadequate market information.

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