Research Article

BEHAVIOR OF PRICES OF MAIZE IN UTTAR PRADESH, VALUE CHAIN AND CONSTRAINTS IN MARKETING OF MAIZE

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Abstract- The study was conducted in the Pandah and Navanagar Blocks of Ballia District of Uttar Pradesh during 2011-12 to see value chain and constraints in maize marketing and price behaviour in Uttar Pradesh. Four villages namely (Kathaura, Bhati, and Rudrabar, Sadwapur) were randomly selected from Navanagar and Pandah Blocks. Twenty farmers from each village (Maize growing villages) were selected on random basis. Thus, a total 80 respondents were selected from four villages. For analyzing the value chain and Constraints, data were obtained by personal interview with Maize growers, Wholesalers and Retailers and for analyzing the Price behavior, data were collected from Kisan Mandi Bhawan, Statistical Department of Lucknow. Tool used for value chain of Maize was Chart Method and Garret's Ranking Technique was used to identify the most important problems/constraints in the marketing of Maize. Collected data were analyzed with the help of simple statistical tools like Means, Percentage, Moving Average etc. Maize is an important crop of the world. Today's time there is much scope for value chain in maize by which it can be processed into different products such as Maize flour, Sattu, Lozi for children, Pashuaaharpind, Bhujia, Dalia, Murgi Dana, Finisher. In the case of small farmers, not selling the produce outside was the problem that was ranked first. Medium farmers and large farmers facing problem of not sending the produce outside and delay in cash payment. Long distance to the primary market, lack of storage facility and poor market information were other important problems for medium farmers. The price of Maize crop depends on the market arrivals and demand. Seasonal indices shows the seasonal prices, in which price indices more than 100 shows that WSP are more and vice-versa. Study revealed by the line graph of wholesale price that maximum price for the year from 2001-02 to 2010-11 is for the month of May and minimum price for the same period is for August month. The Compound Growth Rate (CGR) of MSP is 0.054 and coefficient of determination (R^2) is .880. The CGR for WHOLE SALE PRICE is 0.007 and R^2 is 0.920. For Seasonal component, the CGR is 0.001 and R^2 is 0.067. To overcome the problems related to delayed payments, there is a need on the part of APMC to have strict regulation of practices to ensure prompt receipts of sale proceeds by the farmers. Efforts are to be made to provide market information through multi media for better decision making and to realize a better price decides stabilizing in price.

Keywords- Marketing, Value Chain, Constraints, Whole Sale Price, Retail Price, Minimum Support Price,

Introduction

Maize is an important crop of the world. It is an important crop of Karnataka, Rajasthan, Andhra Pradesh, Tamil Nadu, Uttar Pradesh and Others. Uttar Pradesh occupies eight positions in area and seventh in production of maize in the country, which accounted for 8.58% of area and 6.21 % of production during the year 2009-2010 [1-5]. Maize crop is grown during Rabi, Kharif, and Zaid season as both irrigated and rain fed crop. The noteworthy situation in UP is that there has been wide fluctuation in the Maize production, which is attributed to a number of factors such as the seasonal conditions, area under crop, level of inputs used, price of Maize etc. [6-9]. The price of Maize play a greater role in enhancing of Maize production [10-12]. The crop extensively grown in Ballia, Jaunpur, Aligarh, Kanpur and Itawah Districts of Uttar Pradesh. Ballia market has emerged as the most popular market for Maize in the State. Maize is used as food grain for human consumption. It is being used by manufacturing industries and corn refineries for producing products such as Maize flour, Sattu, Lozi for children, Pashu aahar pind Bhujia, Dalia, Murgi Dana, Finisher [13-18]. In India only 3 percent of the total maize produced is utilized by industries. Marketing plays a very important role in determining the level of income to the producer for his saleable commodity [25-28]. New markets and their supporting institutions: Opportunities and constraints for demand growth [34]. The price of Maize crop depends on the market arrivals and demand [35, 36]. Some time due to large arrivals in the market, Prices decreases and ultimately producer will be in loss. In such case, it is very important to have the empirical studies on prices of Maize. By keeping the importance of the crop, a study was under taken to identify the peak and slack periods of market prices of Maize, to estimate the trends in market prices, value chain and constraints in marketing of Maize.

Materials and Methods

The study was conducted in the Pandah and Navanagar Blocks of Ballia District of Uttar Pradesh during 2011-12 to see Value Chain and Constraints in Maize marketing and price behaviour in Uttar Pradesh. Four villages (Kathaura, Bhati, Rudrabar and sadwapur) were selected randomly from Navanagar and Pandah Blocks for study. After that twenty farmers were selected random basis from each selected villages (Total 80 farmers). After that, a preliminary survey was conducted in the selected villages, wholesaler, retailer, processing unit, mills and consumers in market of Ballia district to know the Value Chain in Maize and Constraints in marketing of Maize through proportionate random sampling technique and the secondary data on prices of maize in Uttar Pradesh State were

collected from kisan mandi bhawan, Statistical Department of Lucknow. The various prices (Wholesale Price, Minimum Support Price, Retail Price etc.) were collected from Agricultural Department in Lucknow from 2000-01 to 2010-11. Monthly wholesale prices were collected for the period 2000-01 to December, 2011. The data were obtained through personal interview.

Value Chain- Chart Method

Garrett's Ranking- for Constraints
Garrett ranking- rank based on percentage
Percent position = $(R_{ij} - 0.5)/N_j \times 100$
R=Rank for i^{th} variable by j^{th} respondent
N_j = No. Of respondents
Convert percent position into value score by using Garrett's table.

Price Behavior:
Time Series analysis
1) Multiplicative data
P_t= T.C.S.I
P_t=price of commodity in i^{th} period i.e. month of the year
P_t= T.C.I
P_t= price of commodity in i^{th} period.
Q_t = TxCxSxI
Where,
Q_t = original observation at time 't'
T = Trend element
C = cyclical movement
S = seasonal variation

I = irregular fluctuations
2) Additive Model
P_t = T+C+S+I
D_{pt} = monthly data on the price of the commodity in i^{th} period
P_t = T+C+I
P_t = price of commodity in i^{th} year
Seasonal Indices
$S = Q_t/M$
Where, M = twelve month centered moving average

Results & Discussion
Value Chain-
The result presented in Flow-Diagram shows that value addition is done from Producer level to Consumer level. Here, producers grow maize by the use of natural resources like water, soil and other resources like seed, fertilizers and machinery. Farmers used to make dalia and maize flour at their home by using maize flour chakki and they use these products for their home consumption and some quantity is sold to the other villagers. Then maize is sent to the processing units where it is processed in to different eatable items like Dalia, pashu aahar pind, murgi dana, finisher, maize flour, sattu, bhujia and lozi for children. Maize is sent to the other places like Lucknow, Jaunpur, Varanasi also for processing into different products like corn flax and other products. Processed food are given design, color which are more preferable, quality like 'A' grade, 'B' grade and so on... , and packing which increases the shelf life of products. Then processed food are sold to buyers which further sell to domestic wholesaler in local markets and foreign wholesaler in outside markets which further sell to domestic retailers and foreign retailers respectively and ultimately these are consumed by consumers[19-24].

Flow- Diagram 1- Flow Chart of Value Chain of Maize
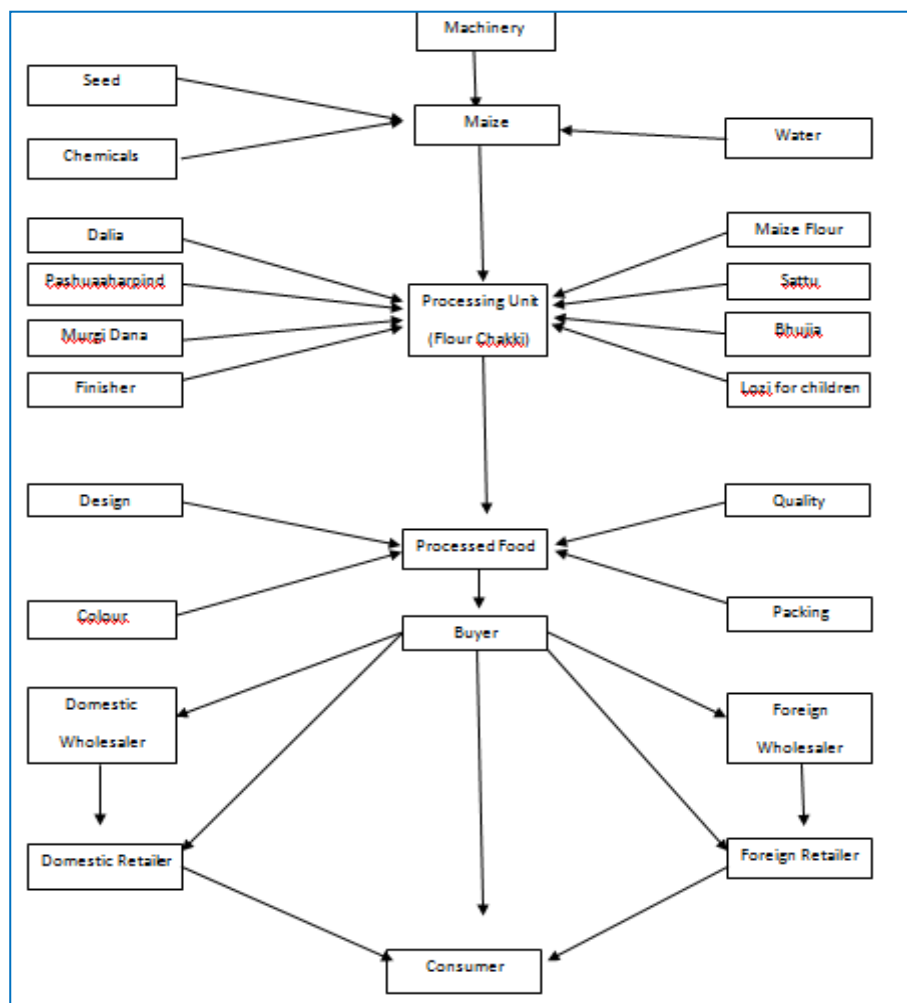
Constraints-

The result presented in [Table-1] shows that 'Not sending the produce outside' has been found to be a most serious constraints (severity 96.47%), as it is ranked first by the farmers, Whereas delay in cash payment (severity 92.94%), has ranked second serious constraint and produce unsold in market (severity 8.32%) is ranked last in case of small farmers. 'Lack of transportation facility' has been found to be a most serious constraints (severity 93.24%), as it is ranked first

Whereas price information and fluctuation (severity 89.38 %) has been ranked second and lack of storage facility (severity 15.89%) is ranked last in case of medium farmers. 'Not sending the produce outside' has been found to be a most serious constraints (severity 85.46%), as it is ranked first whereas 'low price' (severity 81.87 %) has been ranked second and lack of transportation facility (severity 13.58%) is ranked last in case of large farmers.

Table-1 *Constraints related to Marketing of Maize (N=80)*

Sl. No.	Problems	Small Farmer		Medium Farmer		Large Farmer	
		Rank	% of farmers	Rank	% of farmers	Rank	% of farmers
1	Lack of storage facilities	IV	89.41	XI	15.89	VII	55.35
2	Price information and fluctuation	VII	78	II	89.38	III	75.32
3	Produce unsold in market	XI	8.32	VIII	51.87	IX	46.25
4	Problem regarding not Pooling the produce	III	91.76	III	85.12	V	68.75
5	Problem of low price	VIII	68.88	VI	64.53	II	81.87
6	Problem of selling produce late	V	84.28	V	73.98	IV	73.65
7	Problem of not sending the produce outside	I	96.47	IV	79.86	I	85.46
8	Distant market	IX	37.64	VII	58.35	VIII	53.64
9	Delay in cash payment	II	92.94	X	22.56	VI	62.81
10	Lack of transportation facility	VI	83.52	I	93.24	XI	13.58
11	Problem of commission charge	X	9.41	IX	44.43	X	35.68

Price analysis

Seasonal Indices

The result presented in [Table-2] shows price indices of WSP over the months. The Seasonal Prices in which price indices more than 100 shows that WSP are more and vice-versa. Seasonal indices are varied from 97.24198 to 104.2333. The price indices of Maize revealed that the highest price was in the month of February (Rs. 736.1 qtl) followed by March (Rs. 721 qtl) and May (Rs. 715.8182 qtl). The prices were observed lowest in the month of October (Rs. 686.7273 qtl), September (Rs. 689.2727 qtl) and November (Rs. 694.7273 qtl). [29-33].

Seasonal Component -The compound growth rate is 0.001 and Coefficient of Determination (R^2) is 0.067.

2006-07, 2007-08, 2008-09, 2009-10, 2010-11 is 458, 555, 506, 518, 590, 724, 753, 800, 930, 985 respectively and the Maximum irregular value for the year 2001-02, 2002-03,2003-04, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11 is for October month (-34.62), for April month (-54.7), for April month (60.33), for February month (24.33), for March month (48.33), for February month (64.66), for April month (52), for March month (54.66), for July month (-83.66), for March month (56) respectively.

Minimum Support Price (Msp)

The Compound Growth Rate (CGR) of MSP is 0.054 and Coefficient of Determination (R^2) is .880.

It is shown in [Table-3] and [Table-4].

Table-2 *Seasonal Component*

Year	Month	Average	Seasonal Indices
2001-02 TO 2011-12	April	700.2727	-
2001-02 TO 2011-12	May	715.8182	101.3613
2001-02 TO 2011-12	June	712.8182	100.9365
2001-02 TO 2011-12	July	708.8182	100.3701
2001-02 TO 2011-12	August	701.4545	99.32739
2001-02 TO 2011-12	September	689.2727	97.60242
2001-02 TO 2011-12	October	686.7273	97.24198
2001-02 TO 2011-12	November	694.7273	98.37479
2001-02 TO 2011-12	December	706.5455	100.0483
2001-02 TO 2011-12	January	700.9	99.24887
2001-02 TO 2011-12	February	736.1	104.2333
2001-02 TO 2011-12	March	721	102.0951
		706.2045	

Table-3 *Cyclical Component of MSP.*

Year	Msp	Simple Moving Average
2000-01	540	●
2001-02	560	560
2002-03	580	573.33
2003-04	580	583.33
2004-05	590	590
2005-06	600	613.33
2006-07	650	641.66
2007-08	675	721.66
2008-09	840	785
2009-10	840	883.33
2010-11	880	-

Cyclical Component of Wholesale Price

Study revealed by the line graph of wholesale price that maximum price for the year from 2001-02 to 2010-11 is for the month of May and minimum price for the same period is for August month.

Irregular Component

The Central Value for the year 2001-02, 2002-03,2003-04, 2004-05, 2005-06,

Minimum Support Price -The compound growth rate of MSP is *0.054* and R^2 is .880.

Suggestions

The collection of the produce of the farmers at the village itself, by the co-operative societies or the regulated market committee could help in mitigating

transportation cost. The share of producer in the consumer's rupee was relatively higher when they sold their produce directly to the processor. To overcome the problems related to lack of technical guidance, is a need for integrated efforts on the part of extension agency and university in both research and development as well as transfer of technology for better reach out to farming community. To overcome the problem related to delayed payments, there is a need on the part of APMC to have strict regulation of practices to ensure prompt receipts of sale proceeds by the farmers. Efforts are to be made to provide market information through multi media for better decision making and to realize a better price decides stabilizing in prices.

Table-4 *Irregular Component of MSP*

Year	Msp	Moving Average	Irregular Value
2000-01	540	0	0
2001-02	560	560	-51.25
2002-03	580	573.33	-37.92
2003-04	580	583.33	-27.92
2004-05	590	590	-21.25
2005-06	600	613.33	2.08
2006-07	650	641.33	30.41
2007-08	675	721.66	110.41
2008-09	840	785	173.75
2009-10	840	883.33	272.08
2010-11	880	0	0

Conclusion

Maize Value addition is done by both farmers and processors. Farmers done at local level and processor done at market level for further transportation. Farmers used to make dalia, maize flour. Processor produces so many products by using maize grains like maize flour, sattu, bhujia, lozi for children, dalia, pashu aahar pind, murgi dana, finishers. Later they send these products to whole seller, retailer, and directly to the consumers. Then whole seller sale those products either to retailers, consumers. Retailers sell these products directly to the consumers. Maize is also sent to other places like Lucknow, Jaunpur, and Varanasi for processing into different products like corn flax and other products. The results indicated that problem of not sending the produce outside, price fluctuations, forced sale, delay in cash payment, problem of selling produce late, lack of transportation facility and problem of low price were serious constraints in marketing of Maize. The collection of the produce of the farmers at the village itself, by the Co-operative societies or the regulated market committee could help in mitigating transportation cost. To overcome the problem related to lack of technical guidance, is a need for integrated efforts on the part of extension agency and university in both research and development as well as transfer of technology for better reach out to farming community. Efforts are to be made to provide market information through multi media for better decision making and to realize a better price decides stabilizing in prices. The study concluded that, the Prices of Maize were Maximum during February, March, and the lowest were in the month of November, December in the market of Uttar Pradesh. The Compound Growth Rate (CGR) for WHOLE SALE PRICE is 0.007 and R^2 is 0.920. For Seasonal Component, the Compound Growth Rate (CGR) is 0.001 and R^2 is 0.067. The Compound Growth Rate of MSP is 0.054 and R^2 is 0.880.

Abbreviation: MSP= Minimum Support Price, WSP= Whole sale price, CGR= Compound Growth Rate, R^2 = Coefficient of Determination, CGR= Compound Growth Rate

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