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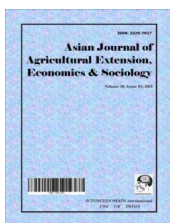
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Minimum Support Prices (MSP) and Its Influence on Cotton Farming in India

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Authors' contributions

This work was carried out in collaboration between both authors. Author RSG designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author VM managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/AJAEES/2019/v30i430118

Editor(s):

(1) Dr. Ian McFarlane, School of Agriculture Policy and Development University of Reading, Reading RG6 6AR, UK.

Reviewers:

(1) Tomasz Dorożyński, University of Lodz, Poland.

(2) Umar Shahbaz, Jiangnan University, Wuxi, China.

Complete Peer review History: <http://www.sdiarticle3.com/review-history/47300>

Short Research Article

Received 19 November 2018

Accepted 25 February 2019

Published 14 March 2019

ABSTRACT

The present study assessed the relationship of MSP and production of cotton and farmers' awareness regarding MSP of cotton. Secondary data of National Sample Survey Office, Ministry of Agriculture and other sources were used for the study. The results showed that only 20.4 and 22.6 per cent of farmers in India are aware of MSP of cotton grown by them in kharif and post-kharif season, respectively. Thus, there is need to facilitate the awareness among the cotton growing farmers in all cotton growing states to avoid distress sale of their produce and assure better income. The growth in area and production and MSP of cotton was higher in period II (2005-06 to 2016-17) indicating the positive relationship. The announced MSP of cotton in the year 2017-18 kharif was lesser than projected C2 and C3 costs with negative managerial profit. Thus, there is need to revise of the cost concept considered for fixing of MSP. The key reason given by farmers for not selling the produce to procurement agency is that no procurement agency or local purchaser is available to procure and there is delay in payments. Thus, there is need to set up additional procurement centres in major cotton growing areas with better infrastructure and finance facilities.

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Keywords: MSP; production; cost; procurement and awareness.

1. INTRODUCTION

Cotton widely known as “White Gold” is a major commercial crop and is having global significance for its lint and seed. Cotton is an important cash crop in many developing countries supporting the livelihoods of millions of poor households. India is the largest producer of cotton in the world during 2016-17 accounting for about 25.31 per cent of the world cotton production [1]. The other major cotton producing countries are China, United States, Pakistan, Brazil, Australia, Turkey etc.

In India, the major cotton cultivating states are Gujarat, Maharashtra, Andhra Pradesh, Telangana, Haryana, Karnataka, etc. Bt (*Bacillus thuringiensis*) cotton was introduced to India in 2002 and commercialised all over the country within two to three years. The major advantage of Bt cotton is effective control of bollworms and increase in yield of a crop. The economy of our country is influenced by cotton through its production and processing sectors and by generating direct and indirect employment. There is necessity for the government to protect the interest of cotton producers and increase in their production by assuring better price for the produce. Assurance of a remunerative and stable price environment is considered important for increasing agricultural production [2]. Therefore, Minimum Support Price (MSP) is one of the components in Agricultural Price Policy in India to ensure agricultural producers against any sharp fall in prices. The major objective of MSP is to avoid farmer from incurring losses of their produce sold.

In India, there have been many concerns of awareness and regarding effective operation of MSP. Some studies have opined that MSP directed to regional imparity in incomes and effective in states where procurement is carried [3,4]. MSP is referred as a safety policy in the study and an attempt has been made to assess the awareness of MSP among cotton growers in India and also major producing states. Other than, pointing out the major reasons of farmers for not selling the produce to procurement agency. The present study tried to represent the relationship of MSP with production and costs for understanding the performance of MSP in cotton.

2. MATERIALS AND METHODS

The data related to farmers’ awareness of MSP in cotton has been collected from ‘Situational

Assessment Survey of Farmers – 70th round’ conducted by National Sample Survey Office [5]. The secondary data regarding area, production and productivity of cotton and Minimum Support Prices (MSP) has been taken for the period 1994-95 to 2016-17 from Ministry of Agriculture and Farmers’ Welfare. The information pertaining to cost of production in cotton and procurement of cotton were collected from other official secondary sources.

2.1 Growth Rate Analysis

The compound growth rates in area, production, productivity, and cost of production and MSP of cotton in India were estimated by using the following exponential growth function of the form:

$$Y = ab^t u_t$$

Where,

Y = Area, production, productivity and MSP of cotton

a = intercept

b = regression coefficient

t = time variable

The equation was estimated by transforming in to log form as follows;

$$\log y = \log a + t \log b + \log U_t$$

Then, the per cent compound growth rate (g) was calculated by using the relationship

$$r = \{\text{antilog of } (\log b) - 1\} \times 100$$

3. RESULTS AND DISCUSSION

The compound growth rates of area, production, productivity and MSP of cotton in India were computed for the period from 1994-95 to 2016-17. The given whole period was divided into period I (1994-95 to 2004-05) and Period II (2005-06 to 2016-17). The considerable change in area, production and productivity of cotton in India was noticed during the period from 1994-95 to 2016-17. In the overall period, the area increased from 78.71 to 108.26 lakh hectares with 1.86 per cent growth and production has been increased with 6.66 per cent growth from 118.88 to 325.77 lakh bales. The negative growth rates were found in area and production of cotton during period I. But, there was major

growth in period II with 3.22, 5.14 and 1.88 per cent growth in area, production and productivity of cotton, respectively. The reasons for increase in production in period II can be attributed to increase in adoption of Bt varieties, improved technology and other factors. The above findings are in line with study of Ramachandra et al. [6].

The produce is procured by government at the announced MSP when the growth in MSP of cotton failed to increase in market price. Thus interest among cotton growers is protected and influenced to increase in area and production of cotton. The growth rates in MSP of medium and long staple cotton were 5.68 and 4.94 per cent, respectively for period I. During the period II, the MSP's of medium staple and long staple cotton found growth of 8.69 and 7.93 per cent, respectively (Table 2). The highest growth in area, production and productivity of cotton were also found during period II. Thus, we conclude

that MSP had impact on area and production of cotton. The change in MSP over the previous year was highest during the year 2008-09 and 2012-13 with (38.89, 47.78) and (28.57, 18.18) per cent for medium and long staple cotton. The overall growth of MSP for the period 1994-95 to 2016-17 was 6.14 and 5.88 per cent in medium and long staple cotton, respectively.

The major determinants of MSP are demand and supply, cost of production, domestic price, international price and inter-crop price parity. But, cost of production is the most important factor in fixing the MSP. Since, relationship between MSP and cost of production in cotton has been analysed for the period 2007-08 to 2016-17. Table 3 resulted that growth in cost of production of cotton for the period is 8.73 per cent, whereas growth in MSP of long staple and medium staple has found 7.01 and 8.36 per cent, respectively. The result indicated that cost of production and

Table 1. Growth in area, production and productivity of cotton for period 1994-95 to 2016-17

Years	Area (lakh ha)	Production (lakh bales) 1 Bale = 170 kg	Productivity (kg/ha)
1994-95	78.71	118.88	257
1995-96	90.35	128.61	242
1996-97	91.21	142.31	265
1997-98	88.68	108.51	208
1998-99	93.42	122.87	224
1999-00	87.10	115.30	225
2000-01	85.34	95.20	190
2001-02	91.32	99.97	186
2002-03	76.70	86.24	191
2003-04	75.98	137.29	307
2004-05	87.87	164.28	318
2005-06	86.77	184.99	362
2006-07	91.45	226.32	421
2007-08	94.14	258.84	467
2008-09	94.07	222.76	403
2009-10	101.32	240.22	403
2010-11	112.35	330.00	499
2011-12	121.78	352.00	491
2012-13	119.77	342.20	486
2013-14	119.60	359.02	510
2014-15	128.46	348.05	461
2015-16	122.92	300.05	415
2016-17	108.26	325.77	512
CAGR (%)			
Period I: 1994-95 to 2004-05	-0.63	-0.04	0.59
Period II: 2005-06 to 2016-17	3.22	5.14	1.88
Overall: 1995-96 to 2016-17	1.86	6.66	4.70

Source: Ministry of Agriculture and Farmers' welfare of India [7]

Table 2. Growth in minimum support prices (MSP) of cotton for the period 1994-95 to 2016-17

Years	Medium Staple		Long Staple	
	MSP (Rs/Q)	% Change	MSP (Rs/Q)	% Change
1994-95	1000	10.00	1200	14.29
1995-96	1150	15.00	1350	12.5
1996-97	1180	2.61	1380	2.22
1997-98	1330	12.71	1530	10.87
1998-99	1440	8.27	1650	7.84
1999-00	1575	9.38	1775	7.58
2000-01	1625	3.17	1825	2.82
2001-02	1675	3.08	1875	2.74
2002-03	1675	0	1875	0
2003-04	1725	2.99	1925	2.67
2004-05	1760	2.03	1960	1.82
2005-06	1760	0	1980	1.02
2006-07	1770	0.57	1990	0.51
2007-08	1800	1.69	2030	2.01
2008-09	2500	38.89	3000	47.78
2009-10	2500	0	3000	0
2010-11	2500	0	3000	0
2011-12	2800	12	3300	10
2012-13	3600	28.57	3900	18.18
2013-14	3700	2.78	4000	2.56
2014-15	3750	1.35	4050	1.25
2015-16	3800	1.33	4100	1.23
2016-17	3860	1.58	4160	1.46
CAGR(%)				
Period I: 1994-95 to 2004-05	5.68		4.94	
Period II: 2005-06 to 2016-17	8.69		7.93	
Overall: 1994-95 to 2016-17	6.14		5.88	

Source: Ministry of Agriculture and Farmers' welfare of India [8]

Table 3. Relationship between cost of production and minimum support price (MSP) in cotton

Years	Cost of Production – C2 (Rs/Q)	Long staple MSP (Rs/Q)	Medium staple MSP (Rs/Q)
2007-08	2110	2030	1800
2008-09	2088	3000	2500
2009-10	2111	3000	2500
2010-11	2129	3000	2500
2011-12	2528	3300	2800
2012-13	2772	3900	3600
2013-14	3533	4000	3700
2014-15	3480	4050	3750
2015-16	3767	4100	3800
2016-17	3920	4160	3860
CAGR (%)	8.73	7.01	8.36
2007-08 to 2016-17			

Source: Ministry of Agriculture and Farmers' welfare of India [8,9]

MSP had increased at almost the same rate. Thus, we can notice that growth in MSP of cotton has been influenced by cost of production.

Table 4 associated with information of all-India weighted average A2 (paid out expenses),

A2+FL (paid out costs + imputed value of unpaid family labour), C2 (comprehensive cost including imputed rent and interest on owned land and capital) and C3 (C2 + 10 per cent of C2 as managerial cost) costs for cotton, as projected by the CACP and announced MSP of cotton for the

year 2017-18 kharif season. The announced MSP of cotton has found 50 per cent more than A2 cost and 20 per cent more than A2+FL cost of production. It's bad with related to C2 and C3 cost, where the announced MSP has seen lesser than these costs. Thus, there is need to clarity of the cost concept considered for fixing of MSP.

Cotton Corporation of India (CCI) is the major procurement agency of cotton in India. As and when cotton prices fall below the level of MSP, CCI to enforce immediate market intervention and involved in the purchase at MSP. The cotton procured in India during 2014-15 and 2015-16 is 8695.8 and 844.5 thousand bales, respectively. The major procurement of cotton was noticed in states of Telangana + Andhra Pradesh, Maharashtra and Gujarat (Table 5). CCI undertakes viable commercial operations at its own risk during absence of MSP operations, for supply of cotton to mills in the domestic market. The purchases of cotton under commercial operations are also made through auctions conducted by the Agricultural produce market committees in the notified market yards.

Table 6 shown the farmers percentage in aware of MSP and involved in sale of cotton grown by them to the procurement agency. The awareness figures stood at 20.4 per cent and 22.6 per cent for kharif and post-kharif, respectively. Thus, less than 25 per cent farmers aware of MSP of cotton grown in India. Out of the farmers' who are aware of MSP of cotton, 34.34 per cent and 37.50 per cent of farmers only sold produce to procuring agency in kharif and post-kharif, respectively. State-wise data on farmers' knowledge indicated that 74.50 per cent farmers in Punjab and 36.20 per cent of farmers in Haryana are aware of MSP of cotton (Fig. 1). The procuring activity of food grains in Punjab

and Haryana states are high and simultaneously high awareness of MSP. Knowledge of MSP of cotton in major procuring states Telangana + Andhra Pradesh, Maharashtra and Gujarat were found just in between 12-27 per cent. Thus, there is need to educate and spread the awareness about MSP among the cotton growing farmers in all cotton growing states to assure proper price for selling their produce and to avoid the distress sale. Similar kind of results was obtained by Aditya et al. [3].

Out of proportion of farmers who were aware of MSP of cotton, 65.66 and 62.50 per cent of farmers in kharif and post-kharif, respectively have not sold the produce to procurement agency (Table 6). Floor price is set up by MSP, and if farmers have received a fair price than MSP, then it is noted as valid reason. Only 24.73 and 33.33 per cent of farmers mentioned that they have received a better price in the market. The major reason given by farmers for not selling the produce to procurement agency is that no procurement agency or no local purchaser were available to procure the produce at MSP. Thus, there is need to set up additional procurement centres in major growing areas with better infrastructure facilities. Also, 32.86 and 33.33 per cent of farmers in kharif and post-kharif, respectively reported that they have not sold to procurement agency because of other reasons. The other reason may include a delay in payments of money by procurement agency. The payment on same day for the procured produce motivated the farmers to increase their production and create more marketable surplus. However, the MSP announcement single does not assure that market prices would not fall below it. An effective procurement mechanism is needed to help ensure that prices would not fall below the floor set by the government [10].

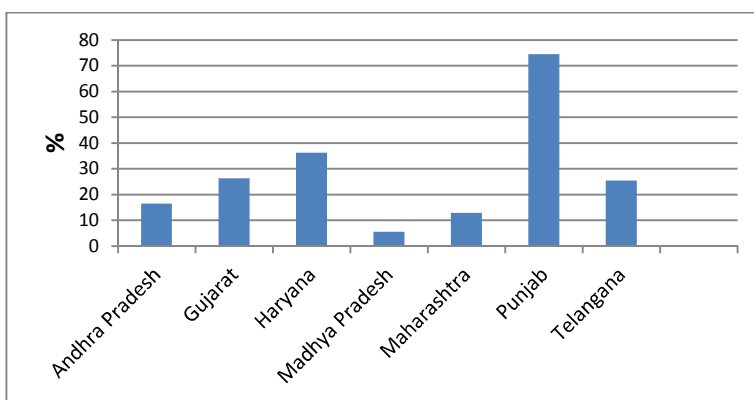


Fig. 1. State-wise awareness of farmers about MSP of cotton

Table 4. Comparison of different cost concepts and MSP in cotton for 2017-18

Particulars	A2	A2+FL	C2	C3
Projected Cost (Rs/Q)	2622	3276	4376	4814
MSP (Rs/Q) – Long staple			4320	
MSP>Cost (%)	64.76	31.87	-1.28	-10.26
MSP (Rs/Q) – Medium staple			4020	
MSP>Cost (%)	53.32	22.71	-8.14	-16.49

Table 5. State-wise procurement of cotton under MSP by cotton corporation of India (CCI)

Years	(In 000' Bales)								
	Andhra Pradesh	Gujarat	Haryana	Madhya Pradesh	Maharashtra	Punjab	Telangana	Others	India
2005-06	350.1 (27.95)	293.2 (23.41)	4.4 (0.35)	118.3 (9.45)	295.2 (23.57)	52.4 (4.18)	-	138.9 (11.09)	1252.5 (100.00)
2006-07	527.6 (44.77)	-	-	89.8 (7.62)	539.8 (45.80)	-	-	21.3 (1.81)	1178.5 (100.00)
2007-08	218.7 (97.94)	-	-	-	-	-	-	4.6 (2.06)	223.3 (100.00)
2008-09	3275.8 (36.66)	1236.1 (13.83)	255.3 (2.86)	736.5 (8.24)	1997.1 (22.35)	255.3 (2.86)	-	1178.7 (13.19)	8934.8 (100.00)
2009-10	445.6 (76.75)	0.2 (0.03)	21.8 (3.75)	-	0.5 (0.09)	21.8 (3.75)	-	90.7 (15.62)	580.6 (100.00)
2010-11	-	-	-	-	-	-	-	0.2 (100.00)	0.2 (100.00)
2011-12	7.6 (98.70)	-	-	-	-	-	-	0.1 (1.30)	7.7 (100.00)
2012-13	2174.9 (95.11)	-	-	3.6 (0.16)	41.6 (1.82)	-	-	66.6 (2.91)	2286.7 (100.00)
2013-14	40.8 (100.00)	-	-	-	-	-	-	-	40.8 (100.00)
2014-15	1755.6 (20.19)	666.5 (7.66)	79.9 (0.92)	281.9 (3.24)	1763.1 (20.28)	79.9 (0.92)	3690.9 (42.44)	378 (4.35)	8695.8 (100.00)
2015-16	40.0 (4.74)	51.5 (6.10)	-	29.0 (3.43)	116.8 (13.83)	-	595.2 (70.48)	12 (1.42)	844.5 (100.00)

(Figures in parenthesis are percentages); *Up to 2013-14, procurement in Andhra Pradesh includes Telangana region; Source: Cotton Corporation of India [11]

Table 6. Farmers' knowledge of minimum support prices in cotton in India

Particulars		Kharif	Post-kharif
Sample size		2114	425
Aware	Number	431	96
	Percentage	20.40	22.60
Not aware	Number	1683	329
	Percentage	79.60	77.40
Sold to Procurement agency (Out of aware)	Number	148	36
	Percentage	34.34	37.50
Not sold to Procurement agency (Out of aware)	Number	283	60
	Percentage	65.66	62.50

Table 7. Reasons quoted by farmers for not selling to procurement agency

Particulars	Kharif	Post-kharif
Procurement agency not available	72 (25.44)	10 (16.67)
No local Purchaser	38 (13.43)	8 (13.33)
Poor quality of crop	8 (2.83)	1 (1.67)
Crop pre-pledged	2 (0.71)	0
Received better prices	70 (24.73)	21 (35.00)
Others	93 (32.86)	20 (33.33)
Total	283 (100.00)	60 (100.00)

4. CONCLUSION

The highest growth in area, production and productivity of cotton was found in period II (2005-06 to 2016-17) with 3.22, 5.14 and 1.88 per cent, respectively. Also, MSP's of medium staple and long staple cotton seen highest growth in period II with 8.69 and 7.93 per cent, respectively. Hence, we can say that MSP had impacted the production of cotton in India. Cost of production is known to be the major determinant of MSP. Both cost of production and MSP of cotton had increased at almost at the same rate over the period. The announced MSP of cotton in the year 2017-18 kharif is found 50 per cent more than A2 cost and 20 per cent more than A2+FL cost of production. The announced MSP is lesser than the A2, AS+FL, C2 and C3 costs. Thus, there is need to clarity of the cost concept considered for fixing of MSP. The major procuring activity of cotton was found in states of Telangana + Andhra Pradesh, Maharashtra and Gujarat.

In India, less than 25 per cent farmers are aware of MSP of cotton grown in India. Out of the farmers' who are aware of MSP of cotton, only 34.34 per cent and 37.50 per cent of farmers sold produce to procuring agency in kharif and post-kharif, respectively. Knowledge of MSP of cotton in major procuring states was found just in between 12-27 per cent. Therefore, there is need to increase the awareness among the cotton

growing farmers in all cotton growing states to increase the bargaining power in selling the produce and to avoid the distress sale. The major reason given by farmers for not selling the produce to procurement agency is that no procurement agency or local purchasers are available to procure and there is delay in payments. Thus, there is need to add up additional procurement centres in major growing areas with improved infrastructure facilities. Also, payment to the beneficiaries is tried to be made on same day.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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