



Impact assessment in COVID 19 on cotton economy of India

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Abstract : The impact of COVID 19 on the economy in general is no doubt ravaging and its impact on agriculture is complex and varied across diverse segments that form the agricultural value chain. Cotton has a complex supply chain that stretch from input suppliers, farmers, traders, ginning factories, spinning mills, textile companies and oil processors. The study was designed to capture the panoramic view of world and national cotton economy during the pandemic period and its impact on cotton farming in India. Cotton prices declined in the initial months for January to April, 2020 and later recouped once the lock down restrictions were phased out. As such from the study during the year 2020-2021, it was noticed in general, as per CAB estimates, cotton farming in India was not affected in its area and production excepting in north zone which was not due to lock down but for the pest attack and lack of irrigation facilities. Districtwise analysis confirmed that labour availability for loading and unloading and its transport was the major impediment especially in the southern zone while it was market uncertainty in the other zones. During the COVID 19 pandemic year, the cotton value chain, like others, had faced unprecedented disruptions. Cotton farmers and supply chain actors should work together to make sure that the farmers have secured acquaintance to sell their cotton. Farmers' protection should be considered a priority in getting the minimal requirements regarding the input supply, logistics and remuneration for their produce.

Keywords : Cotton, COVID 19, economy, impact, logistics, remuneration

The impact of COVID 19 on the economy is no doubt devastating and its impact on agriculture is complex and varied across diverse segments that form the agricultural value chain. In spite of all the measures and in view of continuing restrictions on movements of people and vehicular traffic, concerns have been raised regarding negative implications of COVID19 pandemic on the farm economy. That was also the time when the farm harvests reached the *mandis* (market yards) for assured procurement operations by designated government agencies. The migration of workers from few parts to their native places has also triggered panic buttons, as they are crucial for both harvesting operations and post-harvest handling of produce in storage and marketing centers. India's agricultural sector depends on migrant labourers for several operations. They account for about 11 per cent of the non-self-employed labour force.

Cotton has a complex supply chain that stretch from input suppliers, farmers, traders,

ginning factories, spinning mills, textile companies and oil processors. The supply chain is global, spanning from developing countries, where most of the cotton is grown, to developed countries where raw cotton is processed into finished products. Global supply chain networks are exposed to a number of risks, ranging from supply delays, supply disruption, price fluctuations, demand fluctuations, to exchange rate fluctuations that may occur at any stage of the flow of seed cotton products. However, it is disruptions due to disasters at the production level that can bring the most significant impact on the whole cotton supply chain. The Indian cotton supply chain is known to be disrupted by lack of irrigation facilities, lack of infrastructure, government cotton policy interventions and competition from other fibres among other factors. Globally, exports of agricultural goods declined. In India, there were (a) disruptions in the supply chains; (b) disruptions in the collection of harvests from the farms by traders;

(c) disruptions in the logistics network; (d) shortage of means of transportation *viz*; railways, trucks, trailers *etc.* (e) inter state blockades in the transport of commodities; (f) limited operations of APMC mandis; and (g) shutdowns in the retail markets.

This study was taken up at this juncture to know the real situation existing in cotton production and marketing in India with the following objectives

- ❖ To study the immediate effect of lockdown on cotton farmers in marketing of last year's produce and sowing of current year crop.
- ❖ To study the effect of lockdown on cotton area, production and marketing of cotton during 2020-2021.
- ❖ To suggest measures to mitigate the negative effects of lockdown.

MATERIALS AND METHODS

The study was designed to capture the panoramic view of world and national cotton economy during the pandemic period and its impact using secondary data on area, production, yield, export, import, price and marketing of cotton compared with previous year 2019-2020. District level analysis was taken up to extricate the micro level impact of the lock down in the cotton growing States of India comprising of Punjab, Haryana, Rajasthan from north zone; Gujarat, Maharashtra and Madhya Pradesh from central zone and Andhra Pradesh, Karnataka and Tamil Nadu from south zone. Primary data through structured interview schedule was collected from the cotton farmers through telephonic conversations due to the lock down and the continued pandemic situation in the north and central zones whereas in south zone, AICRP on cotton centres rendered help in collecting the data from the farmers in person. The collected data were tabulated and subjected to percentage analysis to study the impact of COVID 19 and the subsequent lockdown.

Global Cotton Scenario during the pandemic period

a) Impact on cotton production

At the world level, there was 7.25 per cent decline in cotton production in 2020 when compared to 2019 but gained momentum during the next year where it was a slight reduction to the tune of 1.65 per cent in 2021-2022 (July) compared to 2019-2020. (Table I).

b) Impact on cotton trade

i) Cotton export

USA, major cotton exporter, maintained the same level of export to the tune of 3.4 mill MT during 2020 as that of previous year. Brazil and India also showed marked increase during the same period. At world level, cotton export was registered at 15.94 per cent in 2020 as that of the previous year but declined during the next year 2021-2022 to 10.87 per cent (Table I).

ii) Cotton import

China, largest importer of cotton, registered significant increase in cotton exports *i.e.* from 1.6 mill MT during 2019 to 2.4 mill MT during 2020. Other major cotton importing countries like Bangladesh, Vietnam and Pakistan showed a slight increase in the cotton imports during the pandemic period. At world level, there was 17.44 per cent increase in cotton imports in 2020 and reduced to 12.78 per cent in 2021-2022 as compared to 2019-2020 (Table I).

iii) Cotton consumption

The pandemic did not show any effect on the cotton consumption scenario in almost all the major cotton consuming countries like China, India, Pakistan, Bangladesh, Turkey, Vietnam *etc.* There was 15.37 and 19.84 per cent increase in world cotton consumption in 2020 and 2021 in comparison to 2019. The world total demand of cotton was on the increase from 2019 to 2021 compared to its world total supply narrowing down the ending stocks making an impact on global price of cotton (Table I).

c) **Impact on cotton price**

The cotton prices were in tandem with the crude oil prices during the pandemic period (Fig I). Monthly average crude oil price went from almost US\$ 62/barrel in January, 2020 to US\$ 53 in February, 2020, declining to US\$ 21/barrel in April, 2020. . Similarly, the demand for cotton also went down along with world wide crash of textile demand. On this account, cotton prices declined since January, 2020 striking an 11 year low of US\$ 64 in April, 2020. Similarly, the demand for cotton also went down along with world wide crash of textile demand. On this account, cotton prices declined since January, 2020 striking an 11 year low of US\$ 64 in April, 2020. However, this declining trend did not continue for too long once the lockdown was lifted. An upward trend in price at a slower pace was observed right from May, 2020 onwards itself and after that it fully recovered once all the restrictions got phased out completely.

Domestic cotton scenario during pandemic period

a) **Impact on cotton production**

As can be seen in Table 2 below, there was a decline of 3.14 per cent in cotton area planted in cotton growing States of India whereas 1.53 per cent increase in cotton production and 4.98 per cent increase in cotton yield registered during 2020-2021 compared to that of previous year 2019-2020 implying a meagre effect of COVID 19 on the cotton scenario in India.

Regarding area under cotton cultivation, northern zone registered an increase of 1.81 per cent in area, whereas 8.18 per cent decrease in central zone and 5.16 per cent increase in south zone were observed during the same period as mentioned above. There was 1.54 per cent reduction in cotton production in northern zone, a slight increase of 0.77 per cent in central zone and marked increase of 5.1 per cent in case of south zone, respectively. Tremendous increase in cotton yield was registered in the central zone

to the tune of 9.74 during the pandemic period 2020-2021 in comparison to the previous year 2019-2020. It was 3.23 per cent decrease in cotton yield in the northern zone during the same period and no change in case of south zone as it stood at 464 kg/ha during both the years.

b) **Impact on cotton trade**

Due to lock down, the cotton imports declined from 2.3 mill bales in 2019-2020 to 0.8 mill bales in 2020-2021 and thereafter strengthened to one mill bale till June, 2021 due to which the available supply of cotton showed increasing trend along with favourable production hike during 2021-2021. There was a boom in exports since May, 2020-2021 to June, 2021 along with increased mill consumption from 20 mill bales to 26 mill bales during the same period (Table 3). Due to the piling of stocks on account of the world wide lock down during the pandemic period, the demand was easily met after which we could export in large quantities once lock down got relaxed resulting in decreased ending stocks from 16.9 mill bales to 14.4 mill bales during 2021-2022 (July).

c) **Impact on price and arrivals of cotton during the pandemic period**

Regarding the arrivals in cotton market, a drastic reduction in cotton arrivals to the tune of 43.45 per cent was witnessed during this pandemic era due to strict lockdown which led to shortage of labor, transportation and decrease in prices of cotton in the market. Punjab, Odisha and Tamil Nadu registered increased rate of arrivals accounting to 37.33, 30.28 and 12.1 per cent, respectively, during April, 2020-July, 2021 compared to April, 2019- July, 2020 (Fig II).

There has been an increase of cotton price to the tune of 11.25 per cent during 2020-2021 as compared to 2019-2020. There were slight declining trend in prices of cotton. Around 5.5 to 6 per cent was observed during the peak arrivals cotton season from November, 2020 to January, 2021.

Table 1 : Status of cotton trade at word level

million 480 lb. Bales	2019-2020	2020-2021	2021-2022 (July)	% +/- (2020-2021 over 2019-2020)	% +/- (2021-2022 over 2019-2020)
Beginning Stocks	80	97.9	91.6	22.38	14.5-
Production	121.4	112.6	119.4	-7.25	-1.65
Imports	40.7	47.8	45.9	17.44	12.78
Total Supply	242.1	258.3	256.9	6.69	6.11
Export	41.4	48	45.9	15.94	10.87
Consumption	102.8	118.6	123.2	15.37	19.84
Total demand	144.2	166.6	169.1	15.53	17.27
Ending Stocks	97.9	91.6	87.7	-6.44	-10.42

Table 2: Statewise cotton scenario in India during 2020-2021 to 2019-2020

States	Area (lakh. ha)		% +/-	Production (lakh bales)		% +/-	Yield (kg/ha)		% +/-
	2019-2020	2020-2021		2019-2020	2020-2021		2019-2020	2020-2021	
Punjab	3.92	5.01	27.81	9.5	12	26.32	412	407	-1.21
Haryana	7.23	7.37	1.94	26.5	25	-5.66	623	577	-7.38
Rajasthan	7.61	6.72	-11.70	29	27	-6.90	648	683	5.40
NORTH ZONE	18.76	19.1	1.81	65	64	-1.54	589	570	-3.23
Gujarat	26.53	22.73	-14.32	89	90.5	1.69	570	677	18.77
Maharashtra	44.31	41.84	-5.57	87	86	-1.15	334	349	4.49
Madhya Pradesh	6.5	6.44	-0.92	20	21	5.00	523	554	5.93
Odisha	1.7	1.68	-1.18	4	4.5	12.50	400	455	13.75
CENTRAL ZONE	77.34	71.01	-8.18	196	197.5	0.77	431	473	9.74
Telangana	21.27	23.73	11.57	54	60	11.11	432	430	-0.46
Andhra Pradesh	6.54	5.24	-19.88	18	18	0.00	468	584	24.79
Karnataka	6.37	7.21	13.19	20	20	0.00	534	472	11.61
Tamil Nadu	1.7	1.55	-8.82	6	5	16.67	600	548	-8.67
SOUTH ZONE	35.88	37.73	5.16	98	103	5.10	464	464	0.00
INDIA	131.98	127.84	-3.14	359	364.5	1.53	462	485	4.98

Table 6 a. Cotton area and input prices among sample farmers in Maharashtra

Particulars	2019-20	2020-21
Average cotton area (Acres)	5.03	4.52
Seed price (Rs/kg)	729	733
wage rate (Rs/day)	170	228
land preparation (Rs/acre)	916	1018

Districtwise cotton scenario during pandemic period

Due to pandemic situation and lockdown, the stakeholders could not be contacted in person. Structured sampling size was not followed, rather the approachable farmers were contacted who formed the sample size for the study. The data was collected through structured questionnaire over phone or personally in north and central zones. In case of south zone, the schedules were sent to AICRP

centres on cotton for data collection. The filled in questionnaires sent by the centres of south zone were tabulated and analysed. Percentage analysis was done for the study to fulfil the objectives taken up for the study.

As could be seen in Table 4, in north zone, a total of 317 cotton farmers could be contacted in person for the data collection from 77 cotton farmers of six districts in Punjab, 167 farmers of five districts in Haryana and 73 farmers of three districts in Rajasthan. In case of central zone,

Table 5 : Cotton scenario among sample farmers in north zone

States	Average area sown (Acres)		Average, yield(q/acre)	Average, price (Rs./qt.)
	2020-2021	2019-2020		
Punjab	9.28	8.69	8.28	5495
Haryana	8.66	8.79	6.58	5370
Rajasthan	6.40	6.59	7.02	5450

Table 4 : Domestic cotton scenario among the sample cotton farmers in India

States	Total sample districts	No. of sample farmers	Name of the sample districts
Punjab	6	77	Mukatsar, Bathinda, Mansa, Fazilka, Faridkot, Ferozepur
Haryana	5	167	Sirsa, Fatehabad, Hissar, Jind, Bhiwani
Rajasthan	3	73	Hanumangarh, Sriganganagar, Bikaner
Maharashtra	4	120	Aurangabad, Jalgaon, Amravati, Yavatmal
Andhra Pradesh & Telengana	8	250	Prakasam, Guntur, Kurnool, Adilabad, Nirmal, Krishna, Khammam, Warangal
Karnataka	1	40	Dharwad
Tamil Nadu	4	90	Coimbatore, Madurai, Tenkasi, Virudhunagar

Table 3 : Status of cotton at national level

Million 480 lb. bales	2019-2020	2020-2021	2021 (July)
Beginning stocks	9.0	16.9	15.9
Production	28.8	28.3	29.0
Imports	2.3	0.8	1.0
Supply	40.1	46.0	45.9
Mill Use	20.0	24.0	25.5
Exports	3.2	6.1	6.0
Demand	23.2	30.1	31.5
Ending stocks	16.9	15.9	14.4

Table 9 b. Disposal pattern of cotton among the sample farmers during the pandemic period 2020-2021

Details	A.P. & Telengana		Karnataka		Tamil Nadu	
	Before	After	Before	After	Before	After
Average price received (Rs)	4590	5110	4800	5200	4500	5100
Expected price if no lockdown (Rs)		5545		5480		5565
To whom sold (%)						
Village merchant	26	32	-	-	63	68
Ginners	61	47	100	100	-	-
CCI	13	21	-	-	-	-
Local/ regulated market	-	-	-	-	37	32
Transportation charges (Rs/Qt.)	135	175	100	110	220	250
Mode of payment						
Cash (%)	44	31	31	23	100	100
Cheque (%)	-	-	69	77	-	-
Bank transfer (%)	56	69	-	-	-	-

owing to the pandemic situation, 120 sample farmers only could be contacted over phone from four districts in Maharashtra. AICRIP centres rendered great help in collecting the data from the sample cotton farmers in south zone totalling

250 sample farmers from eight districts of Andhra Pradesh and Telengana, 40 from Dharwad district of Karnataka and 90 from four districts of Tamil Nadu.

Table 7 b. Marketing details among sample farmers during the pandemic period 2020-2021

Details	Before	After
Quantity sold (%)	62	38
Average price received (Rs)	4878	4796
Expected price if no lockdown (Rs)		5451
To whom sold (%)		
Village merchant	89	26
Ginners	9	31
CCI	2	30
NAFED	0	13
Transportation charges (Rs/Qt.)	144	153
Mode of payment		
Cash (%)	73	20
Cheque (%)	19	28
Bank transfer (%)	8	52
	100	100

Table 8 a. Cotton Area and Input Prices among sample farmers in South Zone

Particulars	A.P. and Telengana		Karnataka		Tamil Nadu	
	2019-2020	2020-2021	2019-2020	2020-2021	2019-20	2020-21
Average cotton area (acres)	5.20	4.77	2.88	2.81	2.31	2.10
Seed price (Rs/kg)	728	730	743	748	720	744
Wage rate (Rs/day)	240	275	210	265	320	330
Land preparation (Rs/acre)	1992	2213	NA	NA	NA	NA

North Zone:**Impact on production, marketing and price of cotton :**

Analysis shows that there was no impact on cotton production or marketing due to lockdown in the north zone in general. (Table 5). The sample districts in Punjab recorded an increase of 0.59 acre in area under cotton during 2020-2021 as compared to the previous year with average yield of 8.28 q/acre. Price received was Rs. 5495/q. Inputs like seed, fertilisers, pesticides, irrigation, labour, credit were easily available to 100 per cent of the interviewed farmers irrespective of lockdown period. Transport and marketing of the produce was not a hindrance due to the pandemic. In case of Haryana, the average area sown was slightly reduced to 8.66 acres in 2020-2021 from 8.79 acres during 2019-2020 with a decrease of 1.48 per cent. The average cotton yield was 6.58 q/acre fetching average of Rs.5370/q. Inputs were sufficient and easily available to 100 per cent of the farmers excepting for irrigation wherein 5.39 per cent of the farmers

faced shortage not due to pandemic but the dependability on canal irrigation (*Nehri pani*) water. Sometimes, water release in these canals (*Neher*) is not timely and large dry periods also prevail which was experienced during 2020-2021 also. The scenario with cotton in the cotton growing sample districts of Rajasthan was slightly similar to that of Haryana wherein there was a decrease of 2.88 per cent in area sown under cotton during the pandemic year 2020-2021 compared to previous year. They could harvest an average of 7.02 q/acre selling at an average price of Rs. 5450/q in the study area.

Central Zone:**a) Impact on Cotton area and input prices**

Average cotton area per farmer was comparatively less among the sample farmers during current season in comparison with previous season. Average cotton area was 5.03 during 2019-2020 while it was reduced to 4.52 during 2020-2021. There was no change in prices of cotton seed due to the COVID 19 pandemic

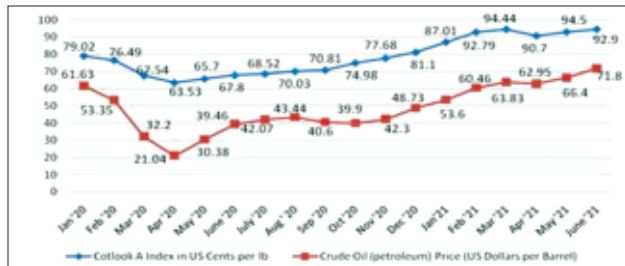


Fig I. World Cotton Price vis-à-vis crude oil price during January, 2020 to June, 2021

situation. It was similar with last year price *i.e.* Rs 730/packet but wage rate was increased due to shortage of labour from Rs.170/day during 2019-2020 to Rs 228/day during 2020-2021. Similarly, cost of land preparation was also increased from Rs 1018/acre during the same period. (Table 6.a.).

Availability of inputs

Most of the cotton farmers expressed that there was no difficulty in getting seed for sowing during 2020-2021. There was a little difficulty in getting fertilizer and their transportation due to COVID 19. Most of the farmers felt that there was scarcity of labour at the time of sowing of cotton.

b) Impact on marketing of cotton

Analysis revealed that 38 per cent of cotton produced was sold after the lockdown. Average price received by the sample farmers before lockdown was Rs. 4878/q while it was Rs 4796/q after lockdown. Farmers expected a price of Rs 5451/q of cotton which was not realized due to lockdown. Village merchants played major role in purchase of cotton before lockdown. About 89 per cent of farmers sold their produce to them before lockdown. After the imposition of lockdown CCI/NAFED played major role in purchase of cotton from farmers. About 40 per cent of the cotton farmers sold their produce to CCI/NAFED during lockdown. Transportation charges were slightly higher after the imposition of lockdown. Most of the transactions before lockdown was in cash while after the lockdown the payment was through cheque/bank transfer. (Table 6b).



Fig II. Change in cotton arrivals during April, 2019 to July, 2021

Problems faced by farmers during the pandemic

Major constraints faced by the sample farmers while marketing of cotton during lockdown were assigned ranks to prioritise them at the district level of all the cotton growing states taken up for the study. Absence of buyers and closure of markets due to pandemic were the two major problems ranked first and second by the cotton farmers. Other problems opined by the cotton farmers were non availability of transport, low prices, long waiting period at the market and scarcity of labour for loading/unloading the produce.

South Zone:

a) Impact on cotton area and input prices

There was a slight reduction in area sown under cotton in all the three States during 2020-2021 when compared to 2019-2020 quite drastically in A.P. and Telangana. (Table 7a.). Seed prices remained same at about Rs 730 to Rs. 750/packet but the wage rate increased from Rs. 240/day during 2019-2020 to Rs. 275/- in 2020-2021 in A.P. and Telangana, Rs.210/- to Rs.265/- in Karnataka and Rs. 720/- to Rs.744/- in Tamil Nadu, respectively. Similarly cost of land preparation also showed an increase during the same period.

Availability of inputs in the south zone

Most of the cotton farmers expressed that there was no difficulty in getting seed for sowing during 2020-2021 but slight difficulty in getting fertilizer and their transportation due to lockdown. Most of the farmers felt that there was scarcity of labour during sowing of cotton more dominant in A.P., Telangana and Tamil Nadu.

b) Impact on marketing of cotton

Analysis showed that the average price received by the sample farmers before lockdown was Rs. 4500/- to Rs. 4800/- q while it was Rs 5100/- to Rs. 5200/- q after lockdown. (Table 7b). Farmers expected a price hovering around Rs 5500/- q of cotton which was not realized due to lockdown. Village merchants played major role in purchase of cotton before lockdown. About 61 per cent of farmers sold their produce to ginning mills before lockdown in A.P. and Telengana but it reduced to 47 per cent after lockdown which was diverted to local merchants (32%) and CCI (21%). In case of Karnataka, 100 per cent of the farmers preferred selling to ginners both before and after the lockdown. Around 63 to 68 per cent of Tamil Nadu cotton farmers sold their produce to village merchants and the rest to local regulated markets. Transportation charges were slightly higher after the imposition of lockdown. Most of the transactions before lockdown was in cash in A.P. and Telengana while after lockdown, the payment was through bank transfer. In case of Karnataka, the transfer was preferred towards cheques over cash after lockdown from 69 to 77 per cent of cotton farmers.

Problems faced

Majority of the cotton farmers at A.P. and Telengana faced very long waiting period in market compared to normal time, non availability of labour for loading and unloading and transport to market place as the prioritized problems followed by less price, less number of buyers and closed markets due to lock down. Closure of markets, very long waiting period and less price were ranked the topmost problems during lockdown by the Karnataka cotton farmers. The ranking of problems in order was less price, long waiting period, labour problems for loading and transport as opined by the Tamil Nadu cotton farmers.

CONCLUSIONS

As such from the study during the year 2020-2021, it was noticed in general, cotton farming in India was not affected in its area and production excepting in north zone which was not due to lock down but for the pest attack and lack of irrigation facilities. District wise analysis confirmed that labour availability for loading and unloading and its transport was the major impediment especially in the southern zone while it was market uncertainty in the other zones. The lockdown resulted in situation wherein about 20 per cent of the current year's crop was either stuck up in fields without being harvested or stacked in farmer's homes, because they were not able to transport or sell it. CCI had stepped in to purchase their produce to safeguard the farmers' remunerative point of view but still the point to be stressed at this juncture is that in the COVID 19 pandemic year, the cotton value-chain, like others, had faced unprecedented disruptions. Cotton farmers and supply chain actors should work together to make sure those farmers have secured acquaintance to sell their cotton. This calls for reinventing the role of stakeholders, not just as procurers of cotton, but with a responsibility for each stage of the supply chain, ultimately supporting smallholder farmers to thrive. The cotton sector is largely unorganised with no comprehensive information regarding the impact of last year's lockdown. Farmers' protection should be considered a priority in getting the minimal requirements regarding the input supply, logistics and remuneration for their produce.

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