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Is Yield Always a Concern to Indian Cotton?

GUEST COLUMN

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It is common to consider yield as an indicator of production competitiveness for a country or an indicator of its profitability for the producers (Fok, 1998). The term "yield" refers to the agricultural output or productivity which is a measurement of the amount of crop grown and or seeds/ grains/ fruits /vegetables/ any produce obtained per unit of area harvested. The unit by which the yield of a crop is usually measured is kilograms per hectare. Usually, crop yield is measured through collecting production data from farmers through their recall, prediction assessment and recordings as well as objective measurements like crop cutting experiments, whole plot harvest, sampling, crop modeling, remote sensing, allometric models and administrative records. Cotton crop in India is no exception for this.

Cotton yield is a measurement of the amount of lint yield (kg) and or seed cotton yield (kg) obtained per hectare. To increase the amount of lint yield acquired per hectare, the country has been endeavoring through various means since its independence. However, the cotton yield in India is always low compared to the world average and being stagnated for many years. Cotton yield in India has always been a concern in spite of introduction of improved cotton varieties/hybrids and transgenic cotton and improved agro techniques. This paper is an attempt of exploration either to justify or nullify the hypothesis that yield is always a concern pertaining to Indian cotton with published and empirical evidences.

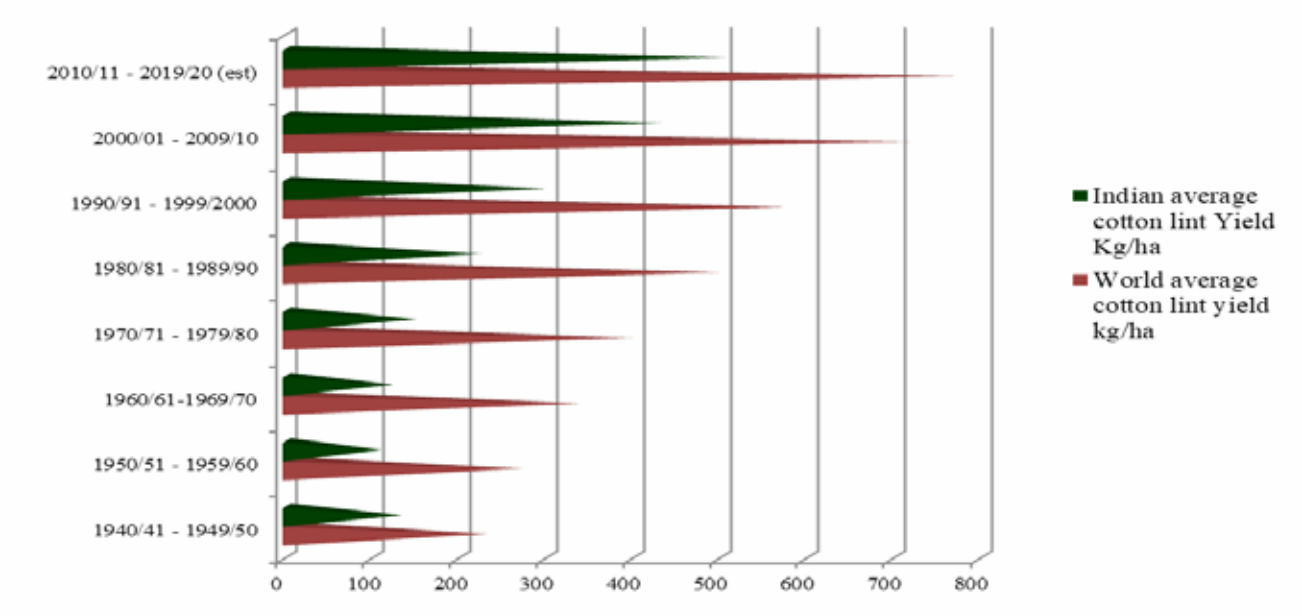
Indian Cotton Scenario

India has been growing cotton for hundreds of years. Indian cotton fabric, Calico and Dhaka muslin cotton were world famous once. India has the ideal climate, suitable soil and toiling farmers to cultivate cotton. Every year India cultivates around 12 million hectares of cotton with 1.5 – 2.0 ha as average land holdings. India has the privilege for cultivating all four of the cultivable cotton species. Cotton in India is being cultivated in three different zones which have diverse agro ecological conditions. Cotton in India does not only satisfy half of the domestic needs of clothing but also earns considerable amount of foreign exchange. It has well-established research institutes, research network and extension wings both at public and private sectors. India has the vast experience of cultivating traditional desi cotton, improved varieties, hybrid cotton and transgenic cotton.

Presently, almost 95% of the cotton in India is hybrid cotton primarily Bt cotton hybrids. Around 40% of the Indian cotton is under irrigated condition predominantly in states like Punjab, Haryana, Rajasthan, Gujarat and Tamil Nadu. The cotton research institutions in India have released many improved varieties / hybrids, cotton production and protection technologies. The well-established extension system of the country has attempted to disseminate these technologies through many well-structured extension programs. Due to all these technological and developmental accomplishments, India could lead in acreage and production at worldwide for many years but not with its productivity. The cotton yield in India is always low compared to the world average and being stagnated for many years (Figure 1).

Figure 1

Decade - wise comparison between world average cotton lint yield and Indian average cotton lint yield



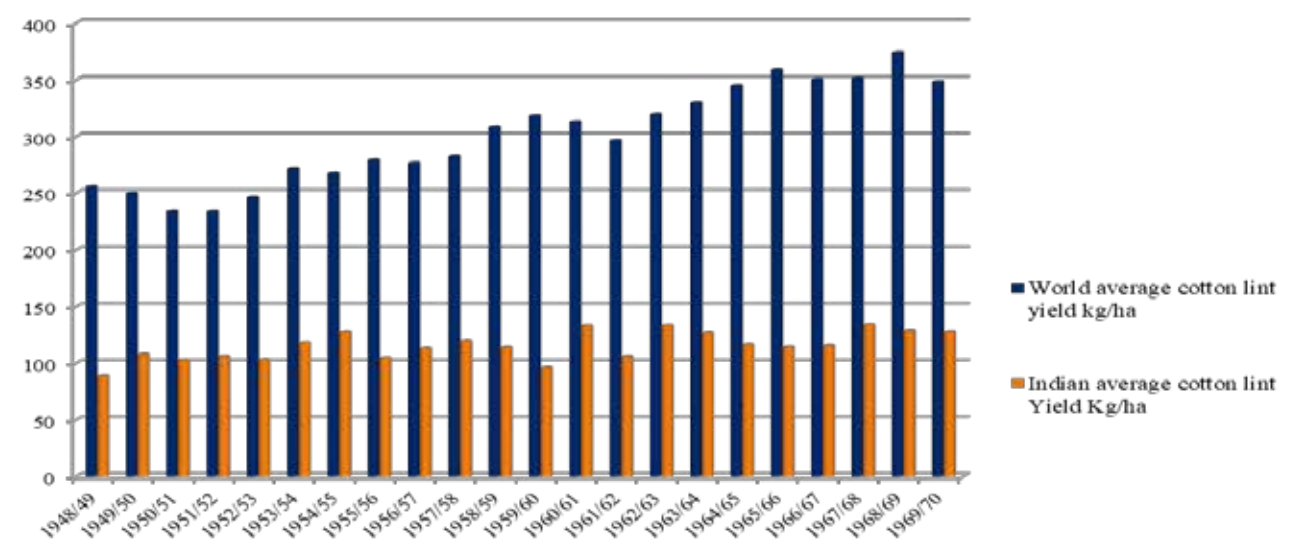
(Source: ICAC, Country Online dated 15.07.2020)

Cotton yield in India during post – independence period until the introduction of hybrid cotton

During post-independence until the introduction of hybrid cotton in India, due to new research and development initiatives, the country witnessed several technology driven changes in quality and quantity of cotton produced. It reflected in the productivity and the average yield rose from 89 kg/ha in 1948 - 49 to 128 kg/ha in 1969-70 to a tune of 44 per cent (Figure 2). Extension campaigns called "Cotton Extension Scheme" and "Grow More Cotton" in the 1950s, development of high yielding varieties and agro chemical based production/protection technologies, Intensive Cotton Cultivation Scheme (ICCS) widely known as "Package

Figure 2

Cotton yield in India during post – independence period until the introduction of hybrid cotton compared with world average cotton lint yield



(Source: ICAC, Country Online dated 15.07.2020)

Program" and institutional developments in the 1960s and enabling policy measures, were the main reasons for yield improvement in this period. In spite of everything, Indian cotton lint yield certainly did not improve. The average India cotton lint yield (115 kg/ha) during this period was lesser than not even half of the world average cotton lint yield (300 kg/ha) and was a concern.

(To be continued...)

(The views expressed in this column are of the author and not that of Cotton Association of India)

Update on Cotton Acreage (As on 23.07.2020)

(Area in Lakh Ha)

Sr. No.	State	Normal Area (DES)*	Normal Area as on Date (2015-2019)	Area Covered (SDA)					
				2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Andhra Pradesh	6.56	6.45	3.42	1.55	2.29	3.10	2.27	2.04
2	Telangana	17.01	17.26	21.09	13.53	14.76	15.00	10.32	14.83
3	Gujarat	26.04	26.32	21.48	21.43	17.23	24.47	17.61	23.45
4	Haryana	6.07	6.41	7.37	6.76	6.65	6.56	4.98	5.81
5	Karnataka	6.47	6.58	4.20	2.17	2.58	3.55	3.62	3.46
6	Madhya Pradesh	5.65	5.85	6.22	5.73	5.24	5.57	5.24	5.31
7	Maharashtra	41.48	41.53	40.78	33.22	35.01	35.53	35.52	35.28
8	Odisha	1.31	1.38	1.57	1.28	1.04	1.31	0.80	1.11
9	Punjab	3.56	3.21	5.01	4.02	2.84	3.85	2.56	4.50
10	Rajasthan	4.77	5.24	6.64	6.36	4.86	5.01	3.74	3.49
11	Tamil Nadu	1.61	1.57	0.05	0.03	0.04	0.03	0.03	0.03
12	Others	0.43	0.46	0.22	0.27	0.17	0.29	0.17	0.21
All India		**120.97**	**122.27**	**118.03**	**96.35**	**92.70**	**104.27**	**86.86**	**99.52**

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Source : Directorate of Cotton Development, Nagpur