



Possible Impact of COVID-19 Pandemic on Cotton Cultivation in North India

Dharminder Pathak

Department of Plant Breeding and Genetics,
Punjab Agricultural University, Ludhiana - 141004, Punjab, India



Dharminder Pathak: Senior Plant Breeder, Department of Plant Breeding and Genetics at Punjab Agricultural University, Ludhiana, India. He is engaged in cotton breeding since the last 18 years and has developed 20 high yielding cotton cultivars. Dr Pathak's major research interests include introgression and mapping of resistance to cotton leaf curl disease (CLCuD) and sucking insect-pests in Upland cotton utilizing A- and D-genome cotton species. Dr Pathak teaches courses in genetics, plant breeding, and molecular biology to undergraduate and postgraduate students. Recently, he was awarded "Appreciation Certificate" by Punjab Agricultural University for his contribution in cotton breeding.



In India, cotton is cultivated in three distinct agro-climatic zones; North zone, Central zone and South zone. Punjab, Haryana, and Rajasthan are the three North Indian cotton growing states. Of the four cultivated species of cotton, only Upland cotton (*Gossypium hirsutum*) and one of the two Asiatic cottons (*G. arboreum*) can be cultivated in this region. Presently, Upland cotton is grown predominantly in this zone as is the case in rest of the cotton growing states of the country. Most of the cotton cultivated in this region is irrigated. Based on the average of last 10 years, cotton in this part of the country was cultivated on approximately 1.5 million hectares (ha) which constitutes about 12.3 per cent of the national cotton area; with an average contribution of nearly 14 per cent to the total cotton production of the country. This zone recorded higher average cotton productivity (572 kg lint ha⁻¹) than the national average of 506 kg lint ha⁻¹ during this period.

Wheat, an important *rabi* (post-monsoon) crop in North India, is cultivated in approximately 3.5, 2.5, and 3.0 million ha in Punjab, Haryana, and Rajasthan, respectively. Due to prolonged winter and inclement weather conditions during the 2019-20 *rabi* season, harvesting of wheat was delayed by 1-2 weeks in these states. A substantial area of cotton in North India is planted in the first fortnight of May, though planting of cotton continues till May end. Cotton areas where quality of the underground water is poor, depend on the availability of canal water for pre-sowing irrigation. Planting of cotton in the fields located at the tail end of canals usually gets delayed. Also, rainfall after the planting of cotton seeds results in formation of crust leading to poor emergence of seedlings

which necessitates re-sowing, thus delaying the cotton crop and adding to cost of cultivation as well. Late planted cotton is more prone to the attack of leaf hopper, whitefly and the dreaded cotton leaf curl disease (CLCuD) resulting in stunted plant growth and severe losses in cotton yields and reduction in fibre quality. However, the delayed harvesting of wheat and the countrywide lockdown due to Covid-19 did not affect the sowing of succeeding cotton crop. All the inputs including cotton seeds have been made available to the farmers. More than 90% of cotton planting was completed by the end of May.

Rice is the most important *kharif* crop of Punjab and Haryana. It is grown on about 3.0 and 1.5 million ha area in these states, respectively, whereas in Rajasthan it is cultivated on around 0.2 million ha. Rice crop is heavily dependent on the manual transplanting of seedlings. Migrant workers from the states of Bihar and Uttar Pradesh arrive in North India between the last week of March to first week of April. They help in harvesting of wheat and other agricultural activities and then stay until the transplanting of rice seedlings is over. After that, intensive work force is not required during rest of the rice crop season. However, due to the COVID-19 pandemic, migrant labourers are unlikely to be available this season. Many farmers resorted to direct seeding of rice circumventing the need for rice seedling transplantation. Due to the shortage of skilled labourers required for rice, cotton acreage increased significantly in Punjab to reach 0.45 million hectares by the 5 June.