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MAPPING COTTON SUPPLY CHAIN IN TELANGANA

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Glossary

- *Commercial cotton:* Cotton or cotton production in local parlance which is used to distinguish it from cotton seed production
- Ginning: Process of separating cotton seed from the lint
- *Kapas:* Raw cotton before separating cotton fibre (lint) and seed
- Spinning: Process of preparing cotton yarn/thread from lint
- Seed 'organiser': Informal agents commissioned by seed companies to act as coordinating link between the companies and cotton farmers
- *Beragaallu:* Informal traders who buy kapas from cotton farmers and sell in the output market
- *Loaders:* Informal aggregators and traders of the cotton produce
- Cotton Corporation of India (CCI): Central agency under government of India procuring cotton directly from farmers at MSP
- Minimum Support Price (MSP): Price offered for cotton produce to the farmers by the CCI
- Agricultural Produce Market Committee (APMC): Committees under state government for regulating all transactions and trade at mandi and authorising traders
- *Mandi:* Notified market yards for agricultural commodities
- Commission agents: Agents licensed by APMC to assist farmers in selling cotton produce in the market

Chapter 1

INTRODUCTION
Mapping Cotton Supply Chain in Telangana

Cotton is an important agricultural commodity in India that is responsible for household income and employment generation to a large section of farmers and agricultural labourers in the country. Directly and indirectly affecting significant portions of the population, it is evident that the sector occupies a strategic position in the regional agrarian political economy as well as in the wellbeing and human development outcomes of the concerned communities.

Sustainability of cotton production involves addressing issues and policies that impact farmers, workers, their families and communities, especially when low income and economic insecurity are also associated with this sector. It also entails promoting environmentally and economically sustainable technologies, and reducing harmful technologies and volatile agricultural practices. These assume priority in view of the participation of vulnerable groups in cotton production activities, in particular women, children, migrant and seasonal workers. The majority of cotton cultivating families are small scale producers with low capacity to withstand input- and risk-intensive cotton cultivation. Repeated crop and market losses push them into high levels of indebtedness, which can give rise to a 'debt trap' leading to a bondage like situation in the credit-cycle of cotton cultivation. Lack of social security in general and insurance against crop failures in particular aggravate the situation of cotton producing communities. It burdens the families which seek to optimise household labour, witnessed especially in women engaging in long hours of fieldwork and also employing their children to reduce labour costs. It has long lasting consequences on families' wellbeing, impacting children's education and their future. There are no institutional collective bargaining mechanisms and the collective formations and mobilisations for the rights and interests of cotton producers are weak. The risks in the cotton supply chain are borne disproportionately by individuals and families engaged in cotton farming. It is marked by income instability and insecurity, occupational health and safety concerns, and employment of vulnerable workforce including women and migrants.

The extended cotton supply chain link agricultural households, traders and enterprises and states with each other. The global nature of the interlinkages in the supply chain significantly influence outcomes at various levels including the farming communities. While the majority of the cotton produced is destined for domestic consumption, India has also emerged as the second largest exporter of cotton in the world. It also imports a small quantity of long fibre variety of cotton which is not available in the country. Within a liberalized trade regime and policies in India, cotton is a freely exportable commodity since the restrictions on cotton trade were lifted in the 1990s. With free movement of goods without barriers to trade, the global demand and price of cotton impact domestic prices. Even if the international, national and local markets are not seamlessly integrated, there is a downward pressure on domestic prices when international cotton prices fall. Additionally, there is a threat to the demand for and competitiveness of cotton fibre in general with the emergence of other fibres in the fibre commodity markets. Hence, changes in the global trading patterns, demand and price structure impact local communities of actors who derive their livelihood from cotton. The various players (and their multiple roles) such as farmer-producers, input and credit suppliers, owners of ginning firms and spinning firms, traders at different levels up to the point of export and their inter-linkages shape the contours of the cotton supply chain. New governance challenges are continuously thrown up by complex production processes that involve the relationships and

contracts between myriad economic agents as is the case for cotton. Along with strengthening formal institutions of support, informal associations, farmers' cooperatives/producer organisations can play a crucial role in addressing the uneven distribution of gains along the supply chain.

At the upstream stage, the production space of cotton is primarily informal and unorganized in India. The producers occupy the lower rungs of the cotton supply chain which continues to be a labour-intensive commodity despite increasing use of mechanization in the production process. These actors are often resource-poor and vulnerable, and are heavily affected by inadequate irrigation, inability to source inputs, increasing costs of cultivation, lack of institutional credit, burden of informal debt and fluctuations in volatile cotton markets. The returns to the cotton farmers for their produce are a paltry proportion of the final retail price of the product. Small, marginal and sometimes even medium farmers are often unable to reach markets due to poor storage facilities and heavy transportation costs of this high volume and low weight product. They can suffer from poor knowledge of market prices, quality and demand for cotton and have minimum access to capital, information and infrastructure. Private traders purchase cotton from the dispersed cotton growing communities, often at prices lower than that prevailing in the market as well as minimum support price (MSP) provided by the state. They also double as exploitative money-lenders on whom the farmers have to depend for credit, usually at high rates of interest. The state is crucial in extending support and subsidies through provision of institutional credit and procurement of cotton at MSP, among other things. However, its reach is limited, and especially the majority of small-scale producers are exposed to the risks of private markets. Against this background, this study sought to map the conditions of cotton production, well-being of cotton communities, supply chain linkages, and identify issues and areas for promoting sustainable livelihoods, improving incomes and decent work conditions in the cotton supply chain.

1.1 Objectives of the Study

This study undertakes an extensive mapping of the actors and their activities in the cotton supply chain in Telangana with a focus on the first link in the global supply chain. To this effect, it foregrounds the socio-economic well-being of the communities engaged in this cash crop production which has a high demand in the global market (as yarn, cloth and ready-made garments) but often leaves the vulnerable producers at the bottom of the value chain in distress. The overall purpose of the project is to incorporate all the inter-connected stakeholders in the initial segment of the cotton supply chain to promote decent work and sustainable production practices at the stage of generation of the raw material. It includes those directly and indirectly linked to cotton farming, keeping farming and farmers at the centre of the analysis and mapping their links with actors in the input and output markets (including private players as well as the state and civil society organizations). The specific objectives of the study are as follows

1. Map the cotton supply chain in the study region and identify the key stakeholders including market players
2. Unpack the myriad activities and linkages in the dynamic cotton network
3. Analyse the opportunities, challenges and vulnerabilities of the actors, especially the cotton growing communities
4. Understand how local communities deriving their livelihood from cotton are integrated in the global supply chain

As the primary study focuses on the local communities and not the extended supply chain, the scope of analysis pertaining to the fourth objective will be limited to the impact of extra-local factors, especially the demand and prices of cotton, on the local market dynamics and output-price discovery for farmers.

1.2 Methodology

This research employs mixed methods of data collection and analysis to shed light on the cotton supply chain which constitutes a complex and dynamic ecosystem of actors partaking in different activities in the life-cycle of cotton. It reflects on the material transfer, financial transactions and information flow that connect actors in varying relationships of employment and exchange in inter-linked markets. The methodology adopted for the study includes analysis of both quantitative and qualitative data from secondary sources and, more importantly, collected through primary fieldwork. Such an exercise made it possible to present a holistic picture of the dynamics of cotton supply chain.

1.2.1 Secondary Research: Desk review

An extensive survey of the relevant literature and secondary data has been undertaken for this study and subsequently triangulated with field-level data. We have analysed the secondary data and information from official sources on cotton production, support price, cost of cultivation etc. This research also engages with academic literature and field-based research relating to cotton production and supply chain as well as vulnerabilities of farmers and workers. We have also reviewed news articles and reports related to cotton farming and market conditions. The secondary research has also reviewed production requirements such as technology and inputs and the regulations affecting cotton producers in the region such as seed price regulation; unregulated technologies such as Herbicide-tolerant (HT) cotton; market conditions and price support and intervention mechanisms; access to credit and other governmental support.

1.2.2 Primary Research: Field Study

Primary research is the major component of this study. It consists of gathering data and information in the cotton-production community through a household survey (detailed below) as well as through qualitative methods. Information was collected from various stakeholders ranging from officials, private input and produce traders, farmers and workers at the market yards and public procurement centres, and members of civil society organisations.

Multi-sited fieldwork: Primary field study is conducted in multiple field sites which include market towns, market yards, ginning mills, cotton procurement centres, villages and cotton farms.

We have mapped and analysed the production node of the cotton supply chain through upstream and downstream linkages of cotton farming which include input suppliers, cultivator-producers, produce traders and ginning millers. This was achieved by taking input and produce market centres (market towns) as the points of entry for understanding and documenting the supply chain. Through preliminary field study, after visiting six cotton producing districts in Telangana and consultations with officials and other key informants, we have selected four districts which represented different produce market structures. The districts are Adilabad, Warangal, Nalgonda and Gadwal. The first two district towns have huge market yards for cotton commodity. These market yards have been both field sites as well as the entry points from where we have selected and

visited villages where cotton is an important crop. After visiting the villages, other smaller produce markets where farmers from these villages sold their produce were also covered. While Adilabad and Warangal have more centralised markets, Nalgonda and Gadwal, in contrast, have dispersed market centres, where ginning mills have been notified as market centres. We have identified a cluster of ginning mills in Nalgonda. However, as the fieldwork proceeded it was observed that the produce markets were even more dispersed as the produce was traded outside notified market centres, including in the villages. Gadwal district offered an additional dimension as parts of the district have emerged as locations for cotton seed production besides cotton cultivation. The dynamics of seed production including its network with seed companies manifest differently from that of normal cotton production within the same area.

We have identified predominant modes and modalities of buying/selling, supply and segregation of raw cotton. Information has been collected from various local authorities such as agricultural market officers, market committees, Cotton Corporation of India (CCI) officials in-charge of procurement, district level agricultural officers and block level agricultural extension officers and others related to cotton production and marketing. These key informant respondents have helped us in critically documenting the role of authorities, structures and mechanisms in place to support producers and regulate private trade and market prices; initiatives to provide facilities and promoting new varieties, increase productivity etc. Their views on the functioning of public procurement system and challenges and constraints therein have been captured. We have also interviewed various levels of traders including ginning factory owners and informal traders and input retailers-cum produce traders.

1.2.3 Methods of field data collection

Sample Survey: Apart from qualitative interviews, we have conducted a small survey of cotton growers to gather quantifiable information both on objective and subjective aspects of cotton production and supply chain. Through a survey of 132 cotton farming households spread across four districts, we captured production relations and the nature of these producers at the bottom of the supply chain. Unlike in the interviews conducted for qualitative data, most of the respondents in the households survey were men. Women supplemented information while men remained main respondents even among the households where women researchers conducted the survey.

Selection of sample: Based on the pilot study, we found that access to market centre was an important dimension in the dynamics of supply chain from the point of view of the farmers. We have purposively selected villages to map the differences in the supply chain. The survey has covered households engaged in cotton farming across these villages.

Qualitative Methods

Besides a household survey, we have collected qualitative data for the study using the methods of individual and groups interviews. We have interviewed various stakeholders and key informants using semi-structured and open-ended questionnaires. As noted above, this included input retailers at their shops, farmers, traders, commission agents and hamalis (head loaders) at the Agricultural Market Committee (AMC) market yards and ginning mills, farmers and labourers in the villages and on the cotton fields. Women farmers and labourers were important sources of qualitative information related to the various activities and labour use in cotton cultivation. Men were more informative about inputs, brand

Photos 1.1 to 1.7 Researchers and field investigators interviewing and discussing with cotton farmers and workers at various sites

names, cost of cultivation and returns. Even when women field researchers were conducting the interviews, men were forthcoming in sharing information related to input and output markets while women mostly supplemented information. In many instances, the women also corrected men about cost of cultivation especially reminding them about exact expenses on labour cost and the number of times pesticide was sprayed etc.

Group discussions with farmers have mapped the production processes, technology use, labour availability, wages, inputs, tenancy, irrigation, profit and loss, scale of cotton farming, challenges in production, storage and transportation issues. Insightful case studies have been developed using in-depth interviews through multiple visits to the sites and interacting with the respondents. These detailed qualitative case studies and other information gathered from the survey and group discussions have been integrated to develop a coherent narrative on the various dimensions of cotton production and supply chain in Telangana and their links to the global markets and state policies.

1.2.4 Field Sites

The field study for the mapping cotton supply chain in Telangana was conducted in four districts, namely Adilabad, Warangal Rural, Nalgonda and Gadwal (highlighted in blue in Figure 1.1 below). Qualitative individual and group interviews were conducted among various stakeholder-respondents and several sites ranging

FIGURE 1.1

Map of Telangana Districts

from market yards, ginning mills, and farms and villages. Household survey was conducted among 132 households spread across 15 villages and 13 mandals in 4 districts. We covered 4 mandals in Rural-Warangal and 3 each in the remaining three districts. In the next level, we covered one village each from 12 mandals across the districts and three hamlets from one mandal of Adilabad.

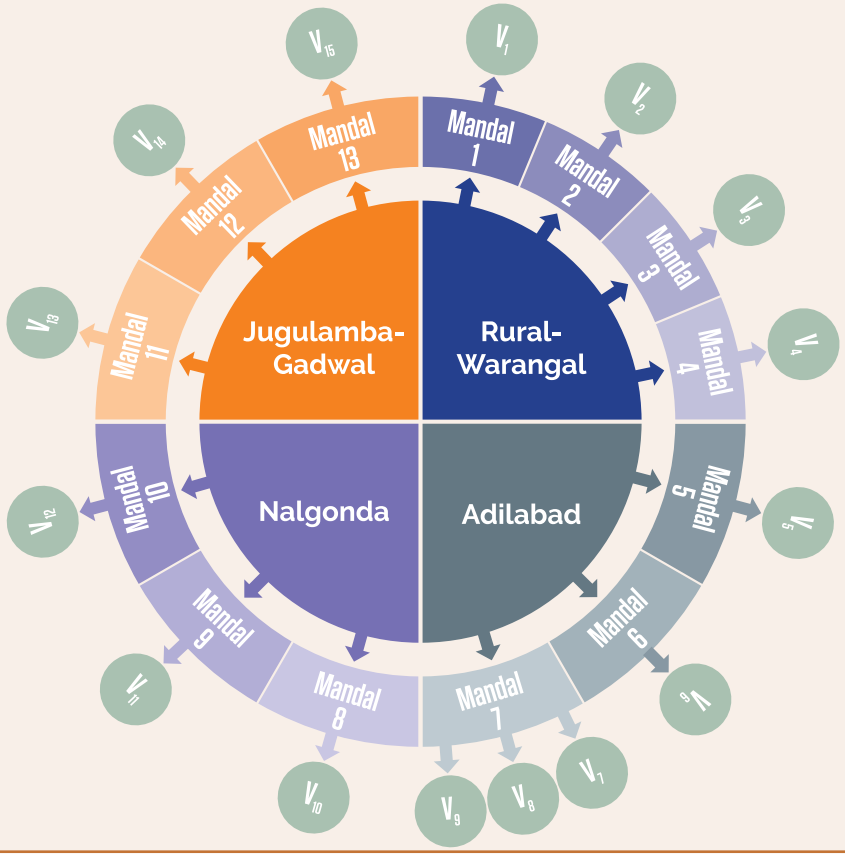
This sample selection was both purposive and random; purposive to capture all possible classes of cotton cultivators and random enough to pick any household from different social-segregated localities within a village. The sample is exclusively focused on cotton cultivators and it only includes households that are currently (in the agricultural year 2019-20) engaged in own-account cotton cultivation. Hypothetically, if cotton cultivators are drawn more from a particular social class rather than all, then that class would have higher representation in numbers even if their absolute presence among farmers in general is lower. On the other hand, it may also be noted that the purposive process of capturing all classes of farmers might result in a selection bias towards those classes which otherwise have disproportionately low presence in numbers (discussed in chapter 3). Figure 1.2 schematically presents the district wise number of mandals and villages covered in the study with 'V' denoting village.

1.3. Structure of the report

The report is structured as follows. The current chapter, introduces the study, outlines the

Figure 1.2

Distribution of villages across 4 districts for sample survey of households of cotton farmers



objectives of the research and provides a detailed methodology. Chapter 2 presents the cotton production scenario in Telangana and the trends in the recent decades. It explores and attempts to understand the context in which the state has emerged as a major cotton producing site. It also examines the scope for further growth in cotton and improvements in outcomes for the cotton producers. It also analyses the intra-regional differences and the shifts in cropping systems which have possible lessons for trajectories of cotton in future. Chapter 3 deals with the intricacies of cotton production based on primary fieldwork in four districts of Telangana. More specifically, it explores the nature of cotton producing communities and the character of contemporary agrarian class structure which shapes the dynamics of cotton production locally and is articulated with the larger supply chain. It explores the formal and informal markets and institutional structures that farmers negotiate with and also document diverse experiences of farmers in cotton production. Chapter 4 broadly maps forms of labour and dynamics of labour engagement in cotton cultivation and production. It explores the significance of both family labour and hired labour and the differences based on the scale of production. It also examines the implications of technology use on labour employment. Finally, it identifies areas and issues with implications for FRPW (Fundamental Principles and Rights at Work) in cotton production. The last chapter analyses the complex cotton supply chain with its range of actors, their operations and inter-relationships. It specifically focusses on the nodes of cotton farming and marketing and investigates the backward and forward linkages of commercial cotton produce.

Chapter 2

COTTON PRODUCTION IN TELANGANA

Cotton emerged as an important agricultural commodity in India during the last two decades, while the country has simultaneously transformed into a major consumer of cotton in the world. This transition is accompanied by an extraordinary growth both in production of cotton and domestic textile industry. Technological developments in cotton farming on the one hand and expansion of and technological upgradation of the spinning industry on the other are considered to have brought about this change[1]. From a phase of importing cotton, India has also become a major exporter of the fibre[2]. Increased domestic and international demand for home grown cotton has contributed to the impetus in cotton farming in India to the extent that the country now has the largest area under cotton cultivation in the world. Cotton emerged as the third largest crop in India after paddy and wheat in terms of the cultivated area it occupies. Its oil is now the fourth major source of edible oil in India[3].

2.1 Cotton Cultivation and Industry in India

A look at cotton cultivation and production in India during the last 70 years shows that the area under cotton which picked up during the first few years after independence had not changed significantly for the next forty years. From about 4.4 million hectares in 1947-48 to 8 million by mid-1950s, it recorded a growth of more than 80 per cent in this initial phase (see Table 1.1 in Appendix). However, up until 1994-95, the area broadly remained the same and fluctuated mostly between 7 and 8 million hectares. The next spurt in area growth was in 1990s, starting with 1995-1996 when it crossed more than 9 million hectares. This phase of growth in the 1990s was marred with severe economic crisis among cotton farmers despite impressive growth rates. Warangal district of Telangana became the epicentre of this distress in 1998 after reported suicides of cotton farmers as a result of cotton farm crisis and indebtedness (Parthasarathy and Shameem, 1998; Revathi, 1998; Vakulabharanam, 2004; Galab, Revathi and Reddy, 2009). In addition, the early years of the 21st century experienced severe drought conditions across the country especially between 2002 and 2004. Farm distress was widely reported in these years across India beyond cotton farms. The neoliberal policies pursued by the government of India since the 1990s, amidst the emerging 'small farm economy', was attributed to the prevailing 'agrarian crisis' at large (see Vakulabharanam, 2005; Patnaik, 2006; Government of AP, 2006; Reddy and Mishra, 2009). The growth witnessed in the late 1990s dipped to the levels of previous decades during these initial years of the millennium.

In the meantime, the GM (Genetically Modified) crop technology was introduced in India in the year 2002 with the transgenic Bt (Bascillus thuriengensis) cotton seed[4]. Bt cotton was touted as a breakthrough in resisting pink bollworm which caused severe damage to the crop earlier. It is only after the year 2005-06 that India witnessed a remarkable increase in area under cotton cultivation - there was nearly 50 per cent growth in cotton cultivation when it peaked and recorded close to 13 million hectares in 2014-15 (see Figure 2.1). This phase of area growth in cotton accompanied the adoption of Bt cotton; the

1. The 'Technology Upgradation Fund' in 1999 and 'Technology Mission on Cotton' in 2000 launched by the Government of India are believed as important initiatives in this growth process (Cotton Corporation of India, https://cotcorp.org.in/national_cotton.aspx)
2. India's export of cotton fibre reached peaks in 2011-12 with nearly 13 million bales, while the imports were around 0.75 million bales. Export quantities, however, have reduced to half in the last few years (Source: Cotton Advisory Board; *Cotton Sector*, Ministry of Textiles, 2019)
3. See Table: 4.26, p. 133, *Agricultural Statistics at a Glance 2018*, Ministry of Agriculture, Cooperation and Farmers Welfare, GoI
4. For a recent critical appraisal on the political economy of the introduction of Bt technology in India, see Flachs, 2016; Stone and Flachs, 2017

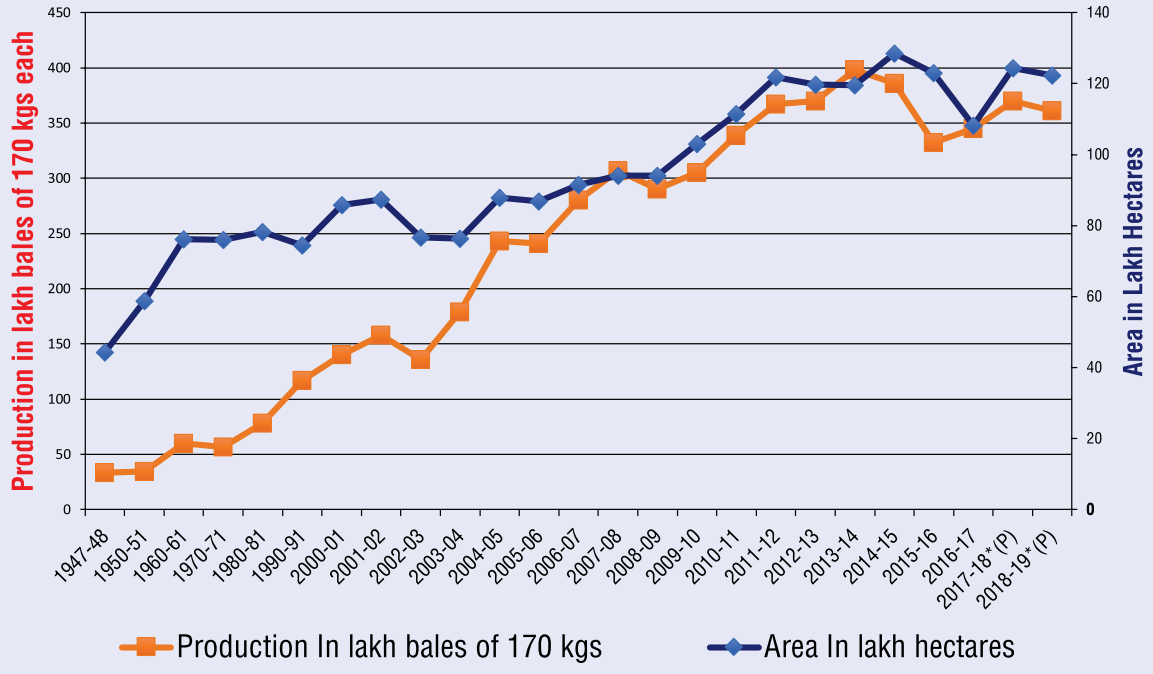
share of Bt in total cotton cultivation increased to more than 90 per cent from about 11 per cent in 2005-06 (see Figure 2.3). However, the growth in production and productivity are not necessarily and clearly linked to the adoption of Bt cotton. The growth in yield had picked up before the adoption of Bt cotton and during the initial years of its adoption, when the reported share of Bt cotton was about 11 per cent, suggesting that other factors too contributed to the growth of cotton. Though largely contested, there is some evidence that part of the productivity growth in cotton owes to Bt cotton technology (see Stone, 2012; Gaurav and Mishra, 2012; Desmond, 2016). Now Bt cotton occupies more than 90 per cent share of cotton cultivated in India and the stagnation of yields in this decade is a concern, which also raises questions on the sustainability of growth through this seed technology.

Production and yields of cotton had slightly different trajectories of growth when compared with area growth. Though the area was more or less stagnant from mid-50s till early 1990s, there was slow but very gradual increase in production during the 1950s, 60s and 70s with fluctuations in between (see Table 1.1 in Appendix and Figure 2.1). Growth in cotton production significantly picked up momentum from late 1980s, and fell between 2000-01 and 2002-03. Despite drought conditions and a decline in the area under cotton in the years 2003-04 and 2004-05, the quantum of production recorded an unprecedented year-on-year growth. Since then there was a phenomenal increase in production touching almost 36 million tons in 2013-14.

However, production stagnated and declined in the next few years despite an increase in the area of cultivation. In other words, the yields have

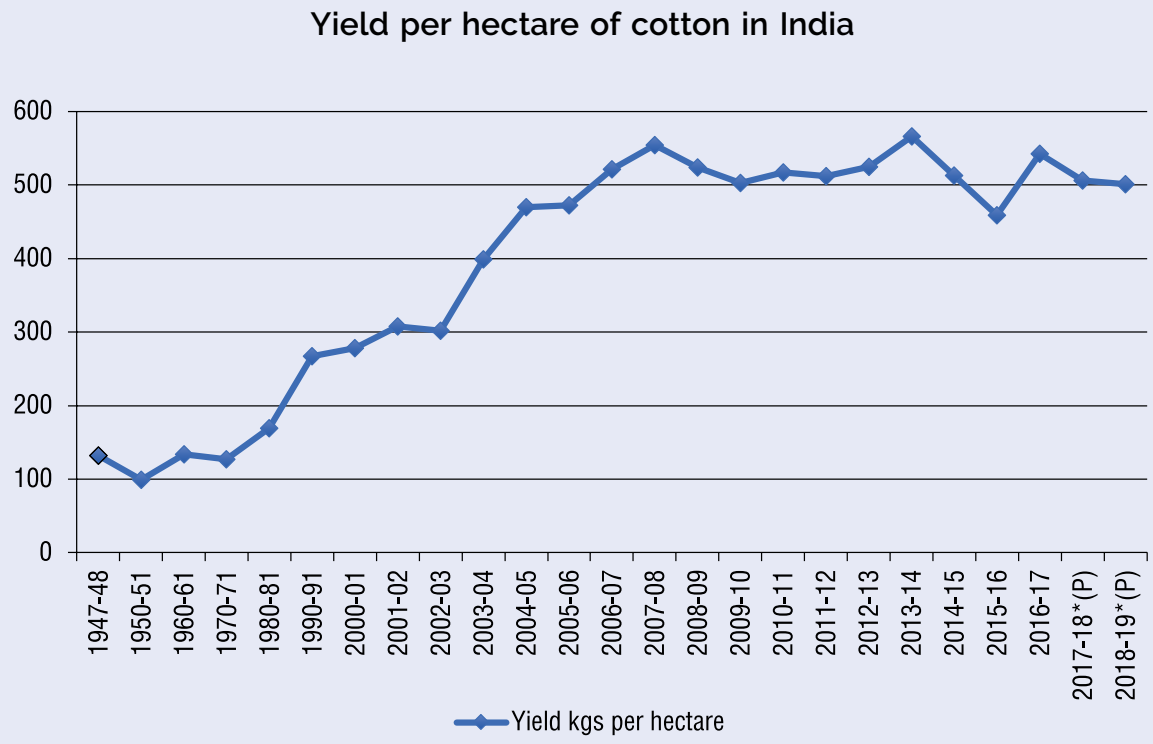
FIGURE 2.1

Area, and production of cotton in India from 1947-48 onwards



Source: Ministry of Agriculture, Cooperation & Farmers Welfare, Govt. of India

FIGURE 2.2



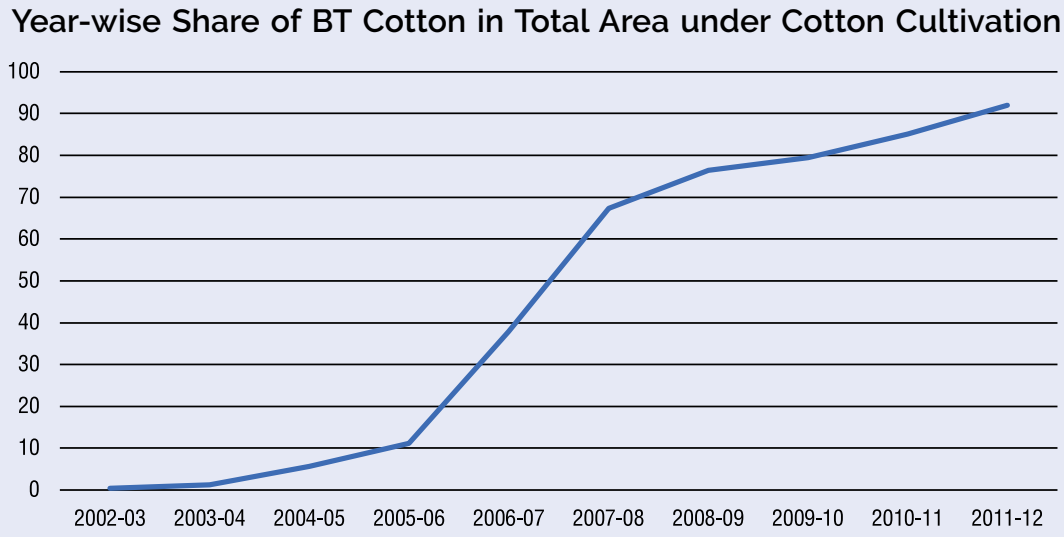
Source: Ministry of Agriculture, Cooperation & Farmers Welfare, Govt. of India

declined since 2013-14 (see Figure 2.2). The yields grew considerably during the decades of 1970s, 1980s and 1990s; there was more than 100 per cent increase in the yields during the 1990s compared to early 70s (see Figure 2.2; for yearly details see Table 1.1 in Appendix). The big leap in the yield was recorded during the first decade of 21st century and yield more than doubled by 2007-08 compared to the late 1990s record. Since then the yields seem to have stagnated. Further, beside high levels of year-on-year fluctuations in yields within regions, there are significant differences in cotton yields between regions (see Figure 2.7), discussed below in the context of Telangana.

Part of this difference perhaps also stems from the differences in cropping systems and practices wherein some regions practice intercrops and others mono-cropping, and some cultivate under irrigation and others in rainfed conditions. Major part of cotton cultivation in India is under rainfed conditions and only about one-third is under irrigation. The share of irrigated cotton grew over the decades from about less than 10 per cent in the 1950s to more than 30 per cent in the 1990s (see Table 1.1 in Appendix). It, however, stagnated during the last two decades suggesting that the increase in cotton cultivation in these years has largely been in regions that depend on rainfed cultivation like Telangana.

Though India has the largest area under cotton, the best of yields at around 550 kilos per hectare is far below the international average of around 800 kilos. Bridging this yield gap is still an important target that would have far reaching implications for the producers and price competitiveness. Commission for Agricultural Costs and Prices (CACP) estimates suggest that there is more than 70 per cent achievable yield gap in Indian cotton

FIGURE 2.3



Source: Lok Sabha Unstarred Question No. 5122, dated on 08.05.2012 & Lok Sabha Unstarred Question No. 1216, dated on 05.03.2 (Accessed form indiastat.com)

production[5]. Yield fluctuations also reflect more clearly the uncertainties and risks involved in cotton cultivation. Safeguards against extreme losses in the crop are lacking given the low levels of insurance coverage. Though it has increased in the recent years, only about one-fifth (20.55 per cent in 2017-18) of the area under cotton cultivation in India is insured under any scheme[6].

2.2 Cotton Production in Telangana

Telangana is the third major cotton producing state in India, after Gujarat and Maharashtra. It contributes currently over 15 per cent and 13 per cent share respectively to the all India acreage and production of cotton. Telangana has witnessed a rapid increase in the area under cotton cultivation and became the second largest cultivated area after paddy in the recent years. In 2019-20 as we undertook the study, it was estimated to have constituted about 40 per cent of the total sown area even overtaking paddy in net terms.

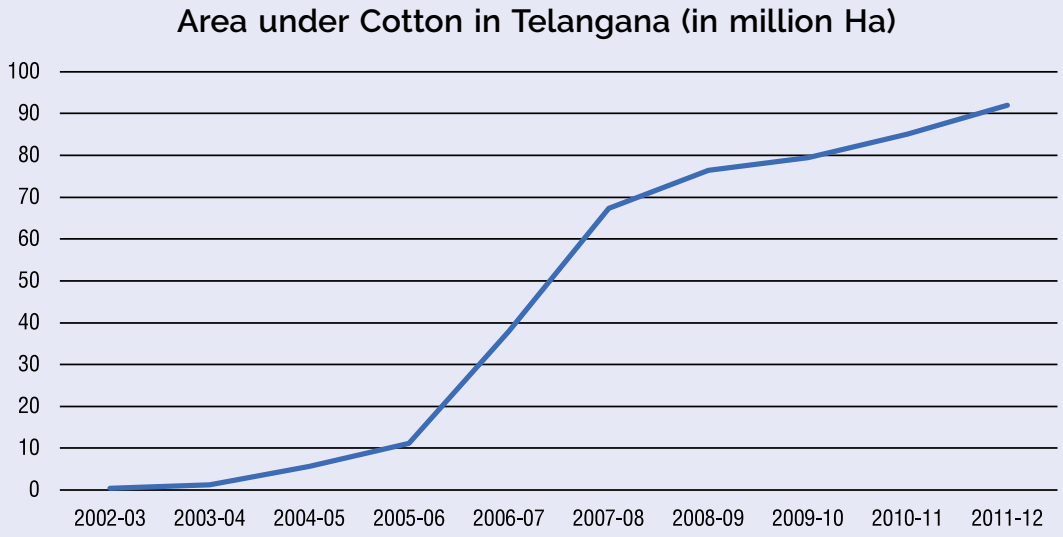
2.2.1 Changes in Acreage, Production and Yields

The area under cotton cultivation has increased about three-fold during the last two decades – from 0.63 to 1.89 million hectares between 2000-01 and 2017-18. The growth in area was especially stark during the six-year period from 2007-08 up till 2012-13, which was more than 100 per cent (see Figure 2.4). During these years, all India growth was also significant but the increase in acreage was much less at about 30 per cent. In other words, it is important to note that the rate of increase in cotton acreage in Telangana was disproportionately higher than average increase across regions in the country during the last two decades.

While area under cotton cultivation in Telangana increased by three times in the last two

5. See *Price Policy for Kharif Crops: The marketing season 2019-20*, Govt. of India, 2019
6. See Table 14.17 (B), p.360, *Agricultural Statistics at a Glance 2018*, Ministry of Agriculture, Cooperation and Farmers Welfare, GoI)

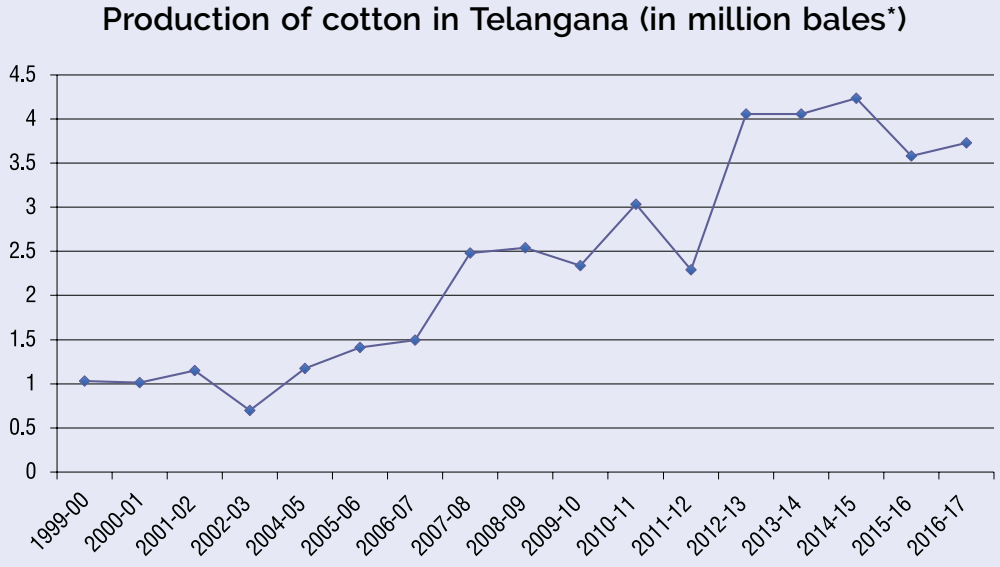
FIGURE 2.4



Source: Directorate of Economics and Statistics, Telangana

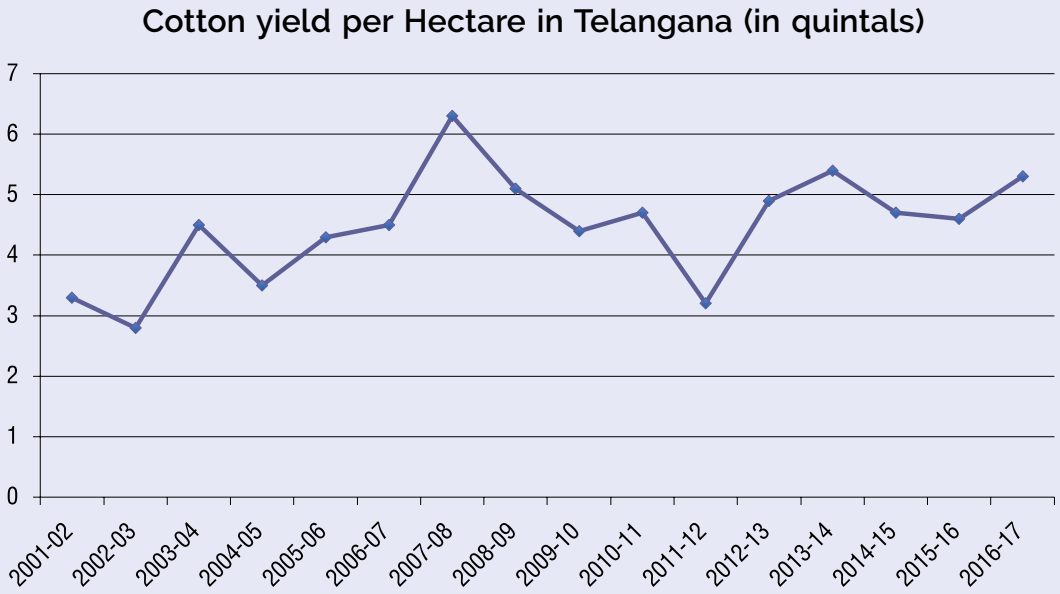
decades, production of cotton increased about four times (when it peaked). It increased from about a million bales in 2000-01 to more than 4 million bales in 2013-14 and slightly declined thereafter (see Figure 2.5). The projected figures for the last couple of years show a possible increase. Growth in production, however, has been largely due to the increase in area under its cultivation, while the yield increases contributed only partially. There was about 90 per cent increase in the yields

FIGURE 2.5



Note: The figures for the year 2003-04 were not available; *bale= 170 kilos
Source: Department of Economics and Statistics, Telangana

FIGURE 2.6

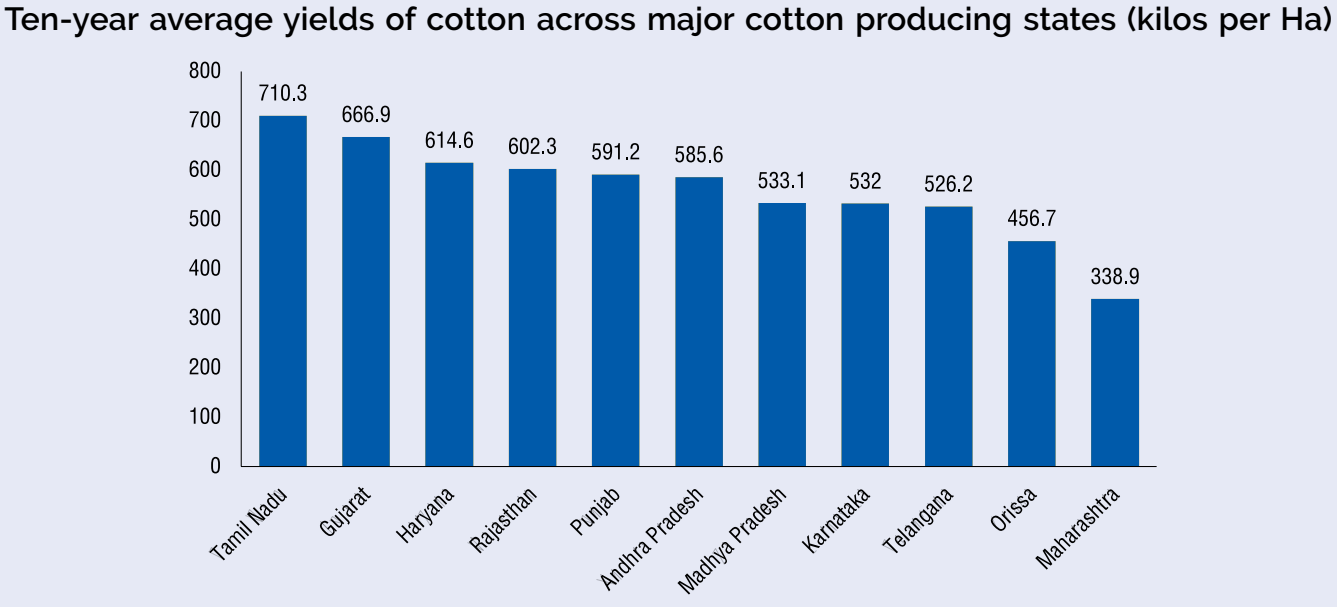


Source: Department of Economics and Statistics, Telangana

compared to 2000-01 when it recorded highest yield of 6.3 quintals per hectare in 2007-08 (see Figure 2.6). Since then, however, yields declined and remained around 5.3 quintals. Thus, last three to four years did not see a significant growth in production even as the area increased.

In effect, the increase in cotton yield in Telangana during the last two decades was only about 60 per cent, while for all India it has been higher at around 100 per cent. In absolute terms the yields in Telangana stand lower than the national average of 5.5 quintals per hectare. Figure 2.7 shows the decadal average cotton yields for major states. Telangana ranks 9th in yield among

FIGURE 2.7



Source: Ministry of Agriculture, Cooperation & Farmers Welfare, Govt. of India

the 11 states that produce considerable share of cotton of India. When compared with the two major cotton producing states, Telangana's yields are 27 per cent less than Gujarat and 35 per cent higher than Maharashtra. The scope for growth in cotton production in the state through yield increase remains a potential opportunity for improving outcomes in cotton farming.

2.3 Factors underlying the shifts towards cotton in Telangana

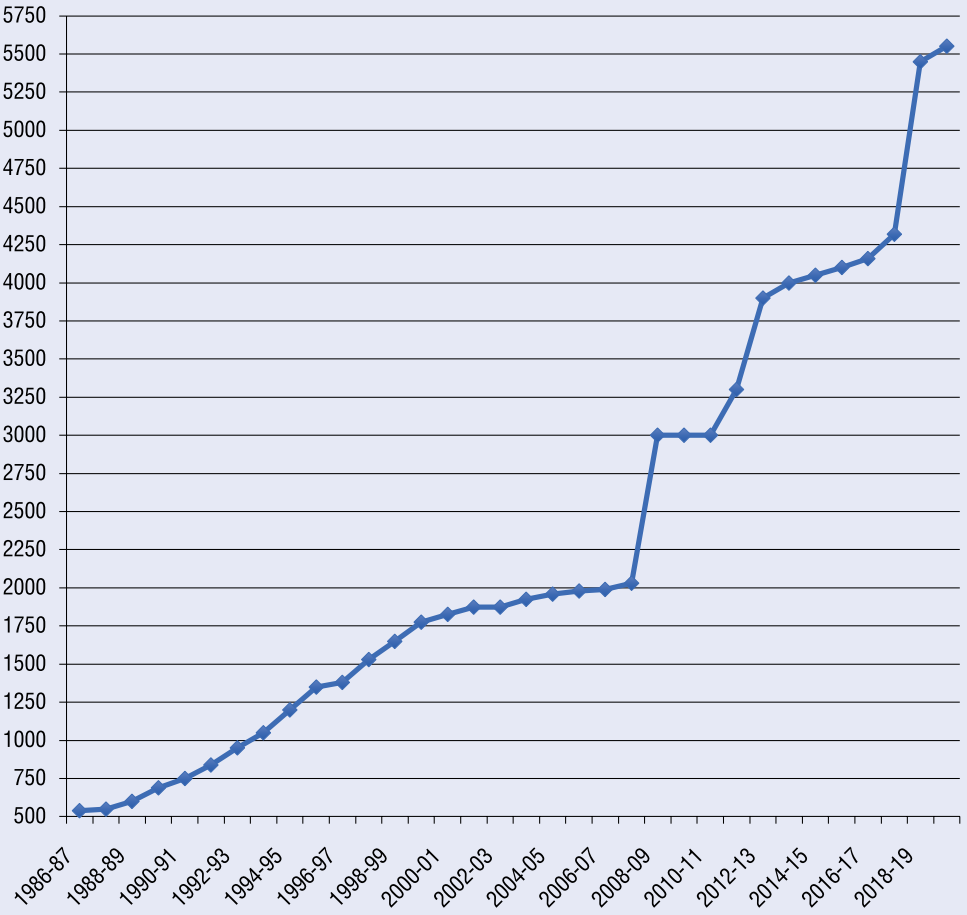
Returns on a particular crop is obviously one of the most important factors that would influence the choice of crop if it is suitable in a region. Paddy has evidently offered more sustainable and relatively more certain returns in general[7] and Telangana in particular shifted towards paddy largely in the 1980s and 1990s (see Alary, 1999; Subramanyam and Sekhar, 2003; Vakulabharanam, 2005). This shift was possible through the expansion of irrigation largely based on ground water at the expense of private investment by farmers. Paddy offered more assured returns because of lower uncertainties in output/yield due to irrigation and better price policy through the Minimum Support Price (MSP) which was relatively more effective in this region. The possibility for expansion of paddy was limited by irrigation capacity - groundwater irrigation had reached saturation points about two decades ago. The other option for better returns in absence of irrigation was cotton; this shift began after realizing the futilities of private investments in groundwater irrigation especially after the drought years between 2002-2004. The returns that cotton promises are also better[8] in comparison with many other crops, but are highly volatile given the uncertainties of rainfall, higher levels of pest infestation and, in turn, the yields (see Narayanamoorthy, 2019 for returns in different states).

Market prices of cotton produce could significantly influence the cultivation choices of farmers. MSP is a crude indicator of the minimum price that farmers could expect though there are issues in realizing this price (which will be discussed later in the report). MSP also has the potential to keep market prices competitive and also to influence farmers in favour of a particular crop. Figure 2.8 shows MSP of cotton since mid-1980s. During the decade between 1990-91 and 1999-2000, MSP was hiked (in nominal terms) by more than 130 per cent, through a gradual increase more or less every year. For the next eight years, there was hardly any increase (14 per cent). But there was a sudden single year hike in the year 2008-09 by 48 per cent, which was unprecedented. Two more such jumps, albeit at a lower scale, occurred in the year 2012-13 (18 per cent hike over the previous year) and 2018-19 (26 per cent over the previous year). It should be noted that the years 2008-09 and 2018-19 had parliament elections scheduled in the later part of these years. It is reasonable to assume that the substantial hike on part of the incumbent governments was to influence farmers positively before seeking a fresh mandate. Other than such possible considerations, fixing of MSP by the government, as CACP suggests, is based on several criteria including cost of cultivation, supply and demand, existing stocks, domestic requirements/ self-sufficiency etc. MSP hikes seem to have also influenced the expansion of area under cotton in the recent years.

7. Currently paddy shows one of the highest gross returns (41 per cent) over cost of cultivation (A2+FL) (see *Price Policy for Kharif Crops: The marketing season 2019-20*, Govt. of India, 2019; p.98-99)
8. See *Price Policy for Kharif Crops: The marketing season 2019-20*, Govt. of India, 2019: based on the costs and returns between 2014-15 and 2016-17 CACP shows 39 per cent gross returns over A2+FL in cotton

FIGURE 2.8

Minimum Support Price (in Rs per quintal) of cotton over the years



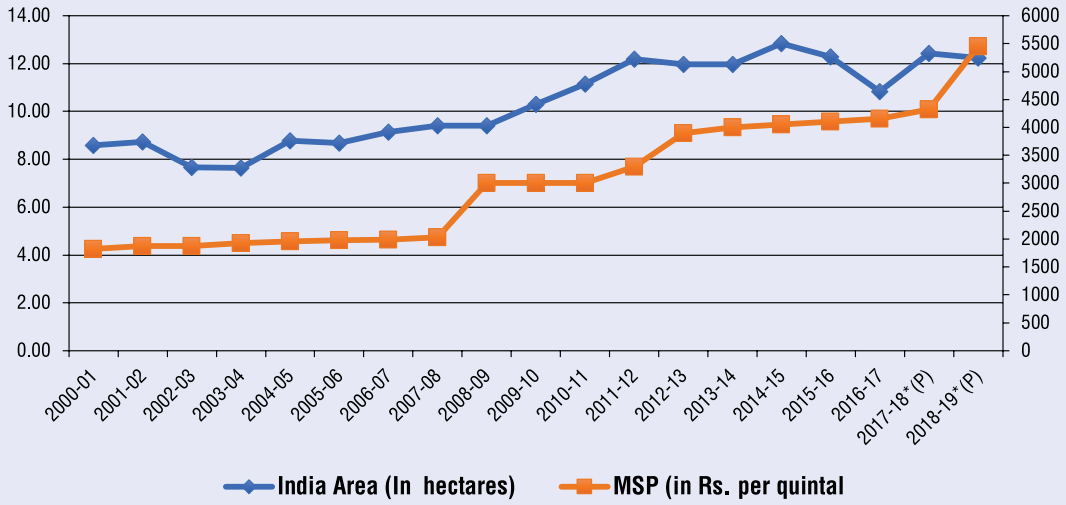
Notes: 1. MSP in the figure refers to Long Staple Cotton from 2006-07 onwards, which slightly varies for Medium and Short staple varieties;
2. Minimum Support Price (MSP) of cotton for H-4

Source: Reserve Bank of India

Figures 2.9 and 2.10 show a rough correlation between the expansion of cotton cultivation in India and Telangana respectively with the increase of MSP in nominal terms. Cotton cultivation in Telangana seems to have particularly responded more positively to the increase in MSP in 2008-09 and between 2008-09 and 2018-19. The remarkable growth (more than 100 per cent) of area under cotton between 2007-08 and 2013-14 coincides with the unprecedented hike in MSP especially in the years 2008-09 and 2012-13. The current agricultural year (2019-20) too is estimated to have reached record levels of 2 million hectares, which followed a substantial MSP hike of 26 per cent in 2018-19. The procurement by CCI at MSP from this region has been prominent compared to other regions. From the year 2014-15 and 2019-20 except in 2016-17 between 40 to 70 per cent of the cotton bales procured at MSP by CCI was from Telangana. The flipside of this feature is that the market prices were lower than MSP in this region while they were higher than MSP in other regions. MSP and state procurement offer a cushion for farmers against falling prices; it needs more scrutiny as to why the market prices have been lower in this region compared to others.

FIGURE 2.9

All India Acreage (in million Ha) and MSP (in Rs/Quintal) of cotton over the years



Ministry of Agriculture, Cooperation & Farmers Welfare, Govt. of India

However, it indicates lower margins for the cotton growers in the region, though the quality of long staple cotton produced in the region is known to be good which is also why CCI with strict quality parameters procures from the region.

2.2.2 Changes in Cost of Production

Cost of production (CoP) of cotton by CACP for Andhra Pradesh[9] (AP) state (before the state was bifurcated into Telangana and AP in 2014) shows a huge increase in the CoP of cotton. Barring the numbers during 2006-07 and 2007-08 which seem like anomalies, there was about 70 per cent increase in the cost of cotton production between 2008-09 and 2013-14 (see Figure 2.10). Surprisingly, this was also a period when Telangana's area under cotton increased by about 100 per cent. This increase was possible perhaps because the returns somewhat matched the increase in production costs, or at least were more remunerative than some other crops which were avoided in favour of cotton. The corresponding increase in MSP during these years was an indication that there was some level of compensation in returns.

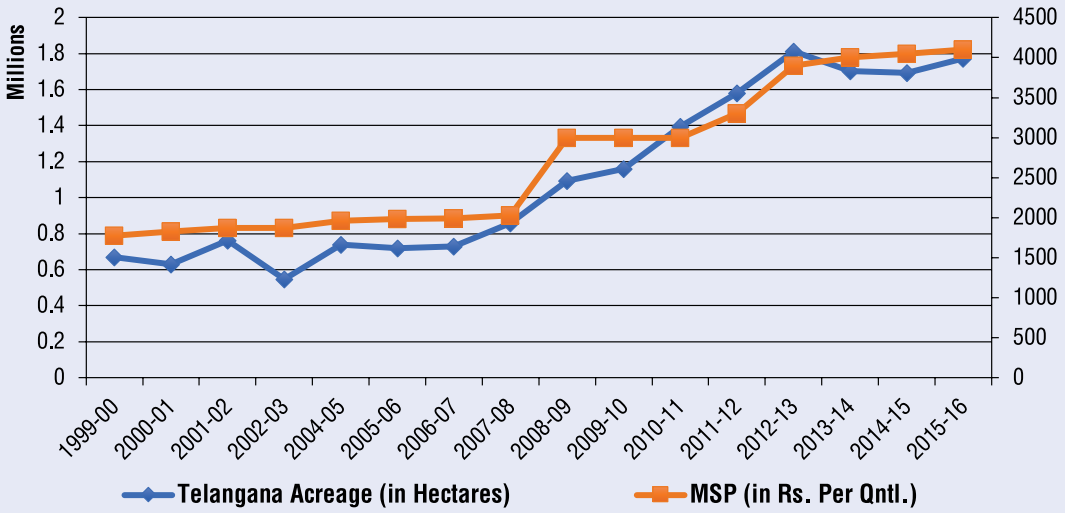
We compare MSP (which is usually equivalent to A2+FL) with cost of production (C2)[10] and see the possible margins for cotton producers (see Figure 2.11). Except for the year 2008-09 when the MSP hike was 48 per cent and the following year, cost of production has remained higher than MSP by a range of Rs. 200 - 500. Unless the market prices are much higher than MSP, the returns on cotton have been bleak. Telangana's dependence on MSP indicates an unpromising scenario of returns in cotton.

9. We examine CACP estimates of CoCP for cotton in erstwhile AP (till 2013-14) in which Telangana region comprised about 60 per cent of cotton production. These estimates should roughly represent the region, assuming that a proportionate sample for cotton cultivation was drawn by CACP from this region. However, we should maintain caution in drawing any clear and strong conclusions.

10. C2 = paid-out cost (A1) + rent paid for leased-in-land + interest on value of owned fixed capital assets (excluding land) + rental value of owned land (net of land revenue)+ imputed value of family labour; for various components and concepts of cost of cultivation and production, see Cost of Cultivation of Principal Crops in India 2007, Ministry of Agriculture, GoI

FIGURE 2.10

Telangana Acreage (in million Ha) and MSP (in Rs/Quintal) of cotton over the years



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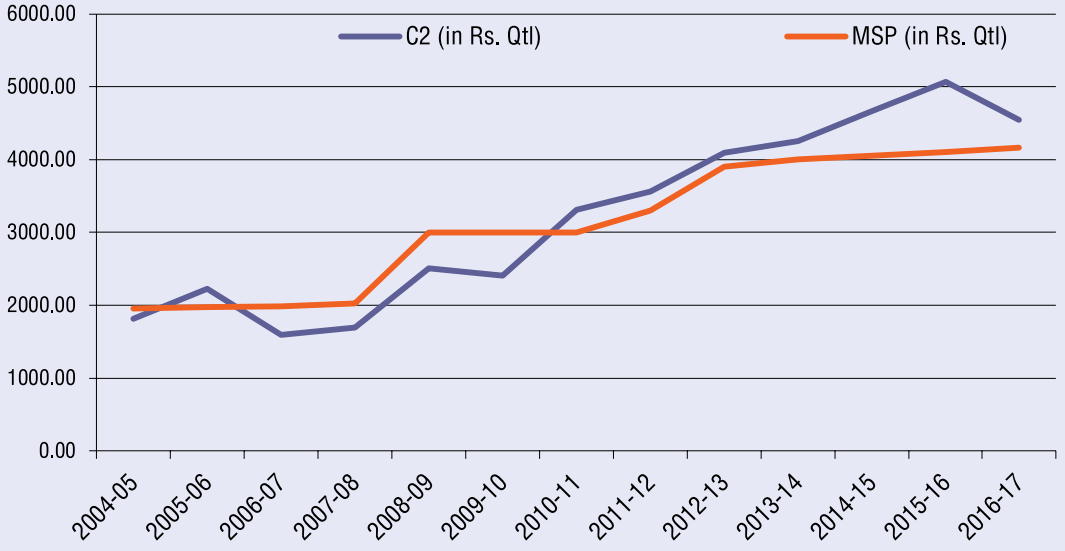
2.2.3 Changes in Labour Use and Technology

Cotton production is a labour-intensive activity in farming. It requires the highest labour engagement among the major crops and higher compared to crops such as paddy. However, the figures from CACP estimates show a decline in the labour use in cotton similar to what is observed in paddy. Figure 2.12 shows total human hours employed in a hectare of cotton cultivation in AP. We consider the trends only till 2013-14 before the bifurcation of the state (as explained in footnote 9). Between

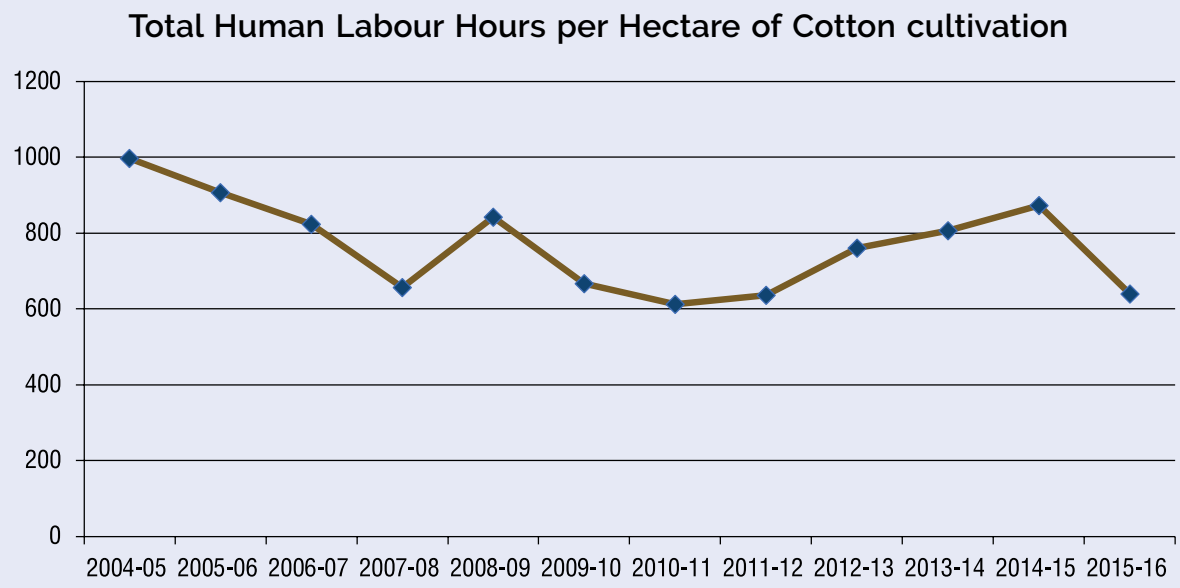
FIGURE 2.11

Cost of Production (C2) and MSP between 2004-05 and 2016-17 (in Rs/Quintal)



Source: Commission for Agricultural Costs and Prices

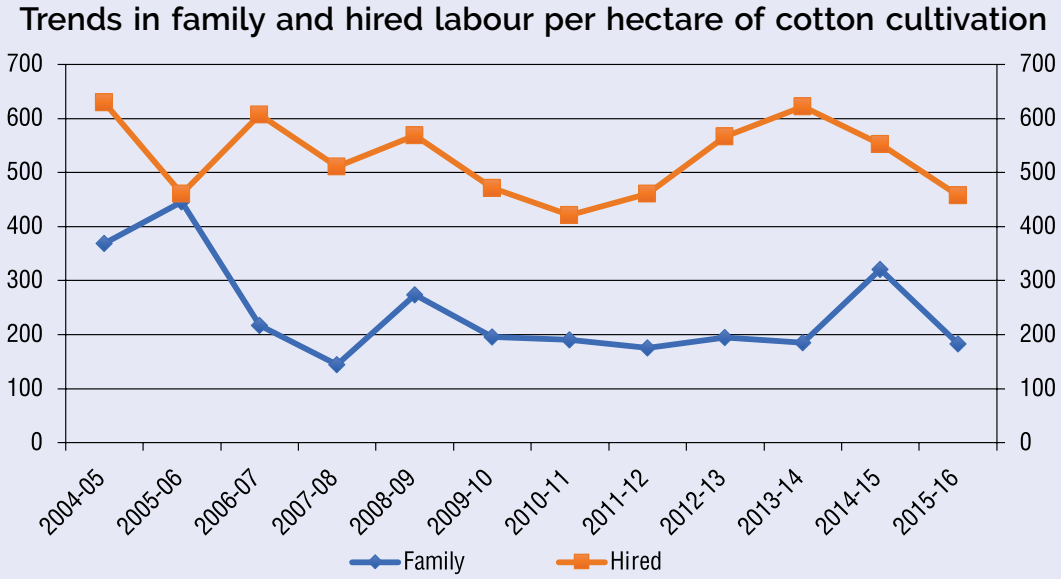
FIGURE 2.12



Source: Commission for Agricultural Costs and Prices

2004-5 and 2013-14, the total labour hours have declined by about 20 per cent - from about 1000 hours to 800 hours. If we exclude the years 2004-05 and 2005-06 which seem exceptions (employment statistics show that these years recorded higher rates of labour force participation and higher labour supply in rural India), then the labour use has only marginally declined or remained more or less same. A cautious reading of this data only suggests that cotton continues to engage higher labour compared to other major crops like paddy. This is an important dimension that would

FIGURE 2.13



Source: Commission for Agricultural Costs and Prices

influence regional patterns of growth/decline in cultivation of cotton depending on the supply and demand of labour. Telangana's emergence in cotton cultivation does suggest a link with its higher supply of labour in rural areas relative to better irrigated regions.

Labour on farms comprises both hired labour and family labour. The component of hired labour increases with the scale of operation and the smaller farms would engage relatively more family labour. On an average, the share of hired labour in cotton cultivation in this region seem have remained between 70-75 per cent with some fluctuations (see Figure 2.13). Barring the years 2004-05 and 2005-06 when the share of family labour was higher, the latter remained between 25-30 per cent. Despite a predominance of and an increase in the share of small and marginal holding farmers, the higher share of hired labour component in cotton is possibly because of i) the higher requirement of labour in cotton and ii) relatively lower share of marginal farmers in cotton cultivation due to its cost-intensive nature.

2.2.4 Patterns within Telangana

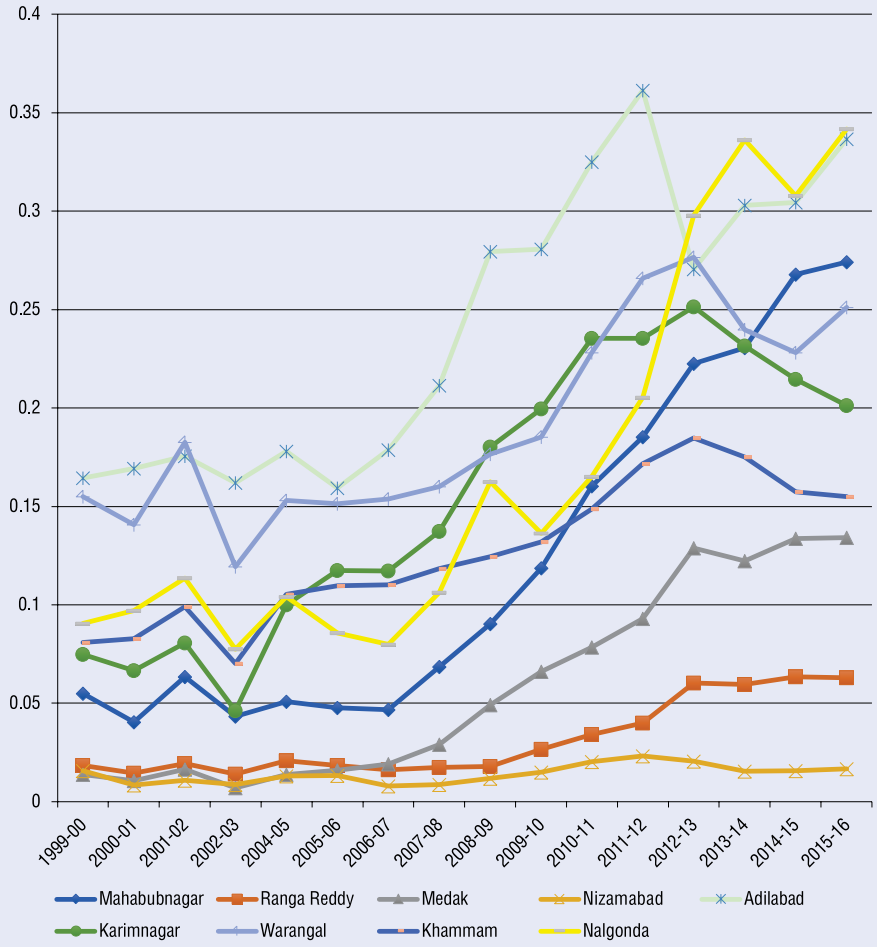
Within the state, only a few districts were in the forefront of cotton cultivation in the 1990s and early 2000s. But by 2012-13, most of the districts have adopted cotton as a major crop. Adilabad and Warangal were the two major cotton producing districts with more than 150 thousand hectares during the 1990s. In the second group were Nalgonda, Khammam, Karimnagar and Mahabubnagar between 90 to 50 thousand hectares. From 2007-08 uptil 2012-13 there was a steep increase in cotton cultivation in all these districts in absolute terms (see Figure 2.14). But the trends seem to be diverging between the more backward districts compared to better off districts and better irrigated districts since 2012-13. The districts of Nalgonda and Mahabubnagar continued to expand area under cotton while Warangal, Khammam, Karimnagar witnessed a fall in the area. This analysis pertains to erstwhile 10 districts (see Map 2) before the reconfiguration of these into 31 districts in 2016. Though

MAP 2

Telangana Erstwhile Districts before Reconstitution

FIGURE 2.12

Change of acreage under Cotton cultivation across 9 rural districts of Telangana



Source: Department of Economics and Statistics, Telangana

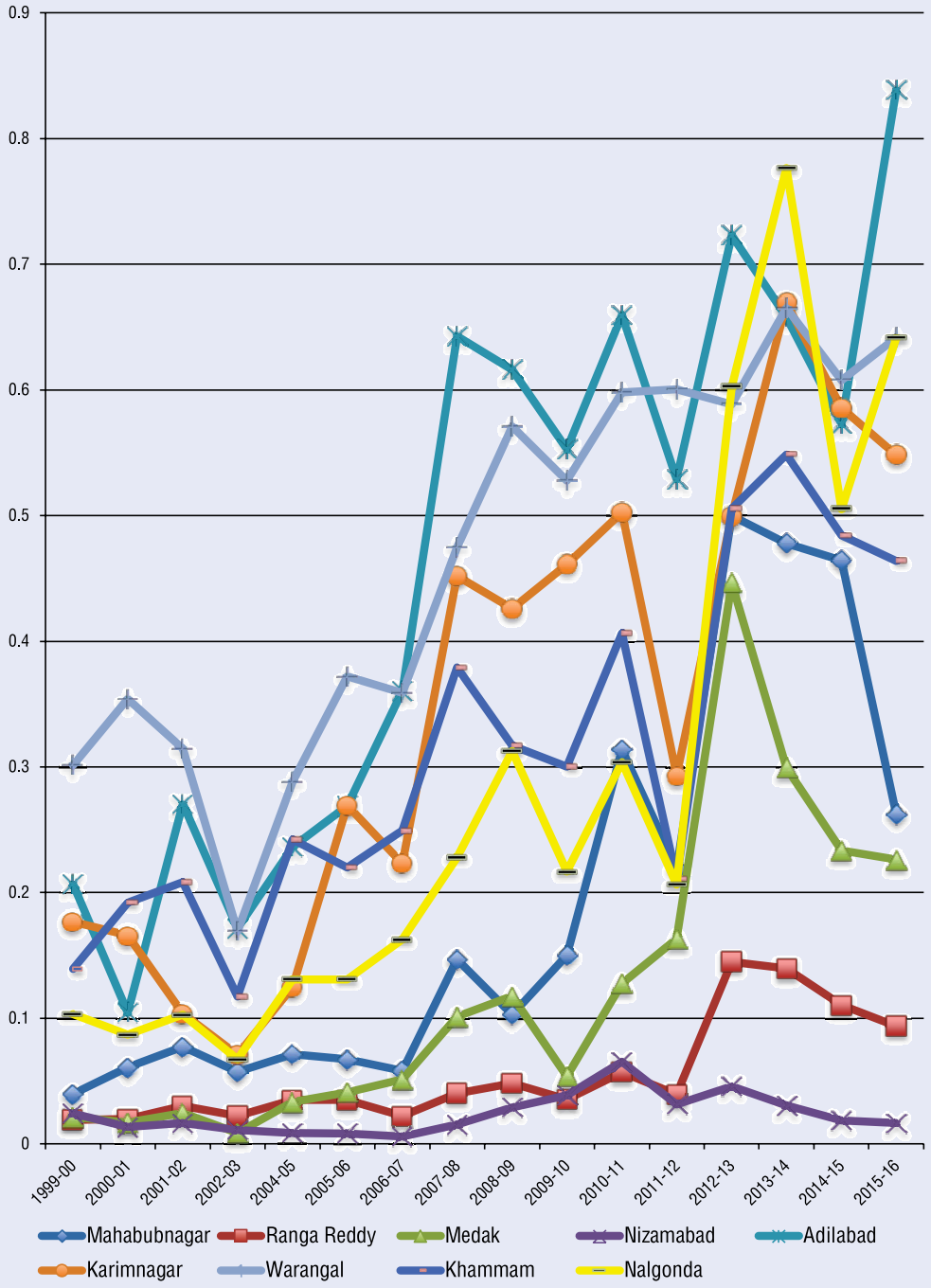
disaggregated district level statistics for the latest years are not available yet, the areas under the old districts of Nalgonda and Mahabubnagar continue to experience an increase in area while Adilabad and Warangal are still among the four major cotton growing districts.

District-wise, production levels show high year-on-year fluctuation despite an overall increase due to the increase in area (see Figure 2.15). There are also significant differences between districts in yields with very low yields in Mahabubnagar and better yields in districts like Adilabad. The districts that are latest entrants in cotton cultivation in terms of expansion such as Mahbubnagar and Nalgonda have lower yields and there is scope for improving the yield gaps in these and other districts.

In terms of share of cotton in the total cultivated area, as shown in Figure 2.16 (A, B & C), barring Nizambad in the north Telangana region, all the remaining districts have more than 30 per cent of their area sown under cotton.

FIGURE 2.15

Production (in million bales of 170 kg) of cotton across 9 districts of Telangana



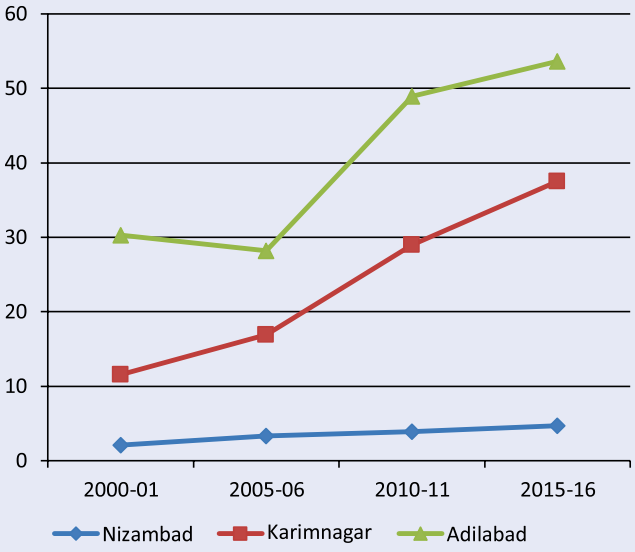
Source: Department of Economics and Statistics, Telangana

The share of cotton crop is more than half in the total sown area in Nalgonda in the south and Adilabad in the north. This agricultural year (2019-20) Telangana witnessed another jump in cotton cultivation in view of the previous year's hike in MSP. Cotton now constitutes about 40 per cent of the total area sown and is estimated to produce more than 50 lakh bales.

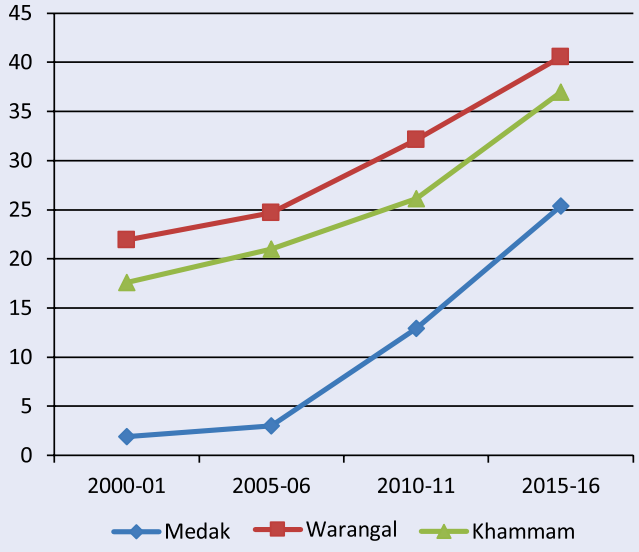
FIGURE 2.16

District-wise Share of cotton in total area sown (Agricultural regions)

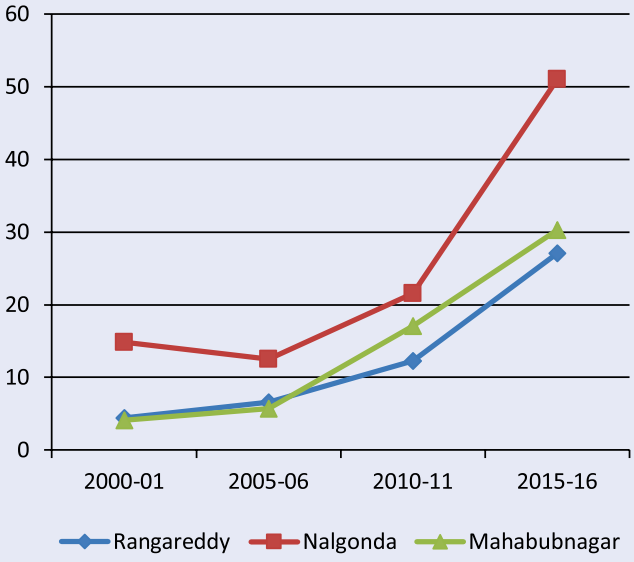
A. North-Telangana region



B. Central Telangana Region



C. South-Telangana region



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Chapter 3

NATURE OF COTTON PRODUCERS, COTTON FARMS AND VULNERABILITIES

This chapter examines the nature of cotton producers in terms of their social class, scale of operation and farming practices, among others. It also analyses the nature of production relations particularly with a focus on land and tenancy, credit and inputs. Finally, it analyses the vulnerabilities of cotton farmers and the risks, and cost of production and returns in cotton farming.

3.1 Land, Ownership and Scale of Operation

What is the typical size of a cotton farm in Telangana? Or, what is the range of cotton farm-sizes that we find in this region? In other words, how big or small are the farmers that engage in cotton production? We examine this question in Telangana based on a small sample survey across the 12 villages.

First, we look at land holdings owned and operated by households in general (and not those who specifically cultivate cotton) based on secondary data sources, National Sample Survey Organisation (NSSO) and Agricultural Census. Telangana has about 5.9 million farming households (operational holdings) with an average operational holding size of one hectare according to Agricultural Census 2015-16[1], and an average size of area of 0.75 hectare owned per household according to NSS 2012-13 survey[2]. Table 3.1a shows the share of number of operational holdings and area operated by land-size classes for all social groups. Only about 11 per cent households operate more than two hectares of land and the remaining operate only up to two hectares. The marginal category holdings (up to one hectare) alone constitutes nearly two-thirds of the total holdings and more than half of them operate less than half hectare (the average size of this category is 0.44 hectare). Table 3.1b presents the structure of ownership holdings from a survey conducted last in the year 2012-13 by the NSSO. A slight difference in structure between operated and owned landholdings, though expected due to tenancy and other factors, could also be a shift away from concentration of land holdings. This difference is in line with the on-going process of fragmentation or dispersal of land, more precisely of land operation, away from the larger size holdings.

The state has witnessed increasing fragmentation of land, and agriculture is predominantly characterized by small-scale farming. Compared to all India figures, Telangana now surprisingly has even lower share of medium and large operational holdings. This is a significant development in the recent decades considering the fact that the average landholding in this region in particular, and in arid and semi-arid regions in general, was historically higher than the high rainfall and better irrigated areas.

3.1.1 How Big or Small are Cotton Farmers in Telangana?

Given this kind of structure of the ownership and operational land holdings, do households across different size-class holdings cultivate cotton or only a particular section does? Usually the debates on technology adoption since green revolution foregrounded class bias involved in the promotion of and shift towards new technologies and commercial or capital-intensive crops. There was an emphasis on the need for scale-neutral technologies. As pointed out above, nearly 90 per cent of the cultivating households operate less than or only up to two hectares of land. Given

1. See *All India Report on Number and Area of Operational Holdings*, MINISTRY OF AGRICULTURE & FARMERS WELFARE GOVERNMENT OF INDIA 2019 (http://agcensus.nic.in/document/agcen1516/T1_ac_2015_16.pdf)
2. This average size is excluding rural landless households (see NSS Report No. 571: Household Ownership and Operational Holdings in India, 2015)

Table 3.1A

Percentage Distribution of Number of Operational Holdings and Area Operated by Size Classes for All Social Groups (2015-2016)

	Marginal		Small		Semi-medium		Medium		Large	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
Telangana	65	29	24	33	9.5	24.6	2.1	11.5	0.16	2.3
India	69	24	18	23	9.5	23.6	3.7	20.0	0.57	9.0

Note: Figures are Provisional
Source: Ministry of Agriculture, Govt. of India; Downloaded from indistat.com

Table 3.1B

Percentage Distribution of Number of households and Area Owned by Size Classes of ownership holdings (2012-2013, NSS 70th Round)

	Landless		Marginal		Small		Semi-medium		Medium		Large	
	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
Telangana	6.2	0.0	71	26.4	14.4	29	6.3	22.5	2.3	18.3	0.23	4.12
India	7.4	0.0	75.4	29.8	10	23.5	5	22	1.9	18.8	0.24	5.81

Source: NSS Report No. 571: *Household Ownership and Operational Holdings in India*, 2015

that cotton is widely cultivated now in the state and constitutes about 40 per cent of the sown area, no particular section can account for such a huge operated area[3]. In absence of secondary data of the distribution of cotton farming across land-size classes, the household survey conducted for this study throws light on which class of farmers cultivate cotton and their scale of operation. As discussed in the methodology section (Chapter 1), the survey was conducted among cotton farmers in four districts of Telangana state. The sample of households purposively selected among cotton cultivators excludes households that did not cultivate cotton during the survey year. More precisely, the survey only covers households that engaged in own-account cotton cultivation in the agricultural year 2019-20. The sample of 132 households was spread across four districts to capture diverse classes of households and variation in the contexts of cotton cultivation.[4] Besides supplementing information gathered through qualitative methods, the purpose of the survey, rather than being statistically representative, was to map and understand patterns and variations. Nonetheless, the spread of the sample spatially and across social classes fairly represents the dynamics of cotton production and supply chain in the region.

3. The total area operated by the large, medium and semi-medium categories of holdings together is about 38 per cent. Unless whole of the area of these holdings is under cotton, it cannot account for the total area of cotton in the state, which is clearly not the case based on the primary field study.

4. It should be noted that, hypothetically, if cotton cultivators are drawn more from a particular social class rather than all, then that class would be represented higher in numbers even if their absolute presence among farmers in general is low. It may also be noted that the purposive process of capturing all classes of farmers might result in a selection bias towards those classes which otherwise have disproportionately low presence in numbers.

Table 3.2

Number of sample cotton farming households and their percentage distribution based on size of land owned and cultivated

Land Category	No. of HHs based on Own agricultural land	% of HHs based on own agricultural holdings	No. of HHs based on cultivated/ operated land	% of HHs based on Cultivated/operational holdings
Landless (no agri. land)	9	6.8		
Marginal (up to 2.5 acres)	21	15.9	16	12.1
Small (2.51 -5 acres)	59	44.7	55	41.7
Semi-medium (5.01-10)	32	24.2	36	27.3
Medium (10.01 to 25 acres)	9	6.8	23	17.4
Large (more than 25 acres)	2	1.5	2	1.5
Total	132	100	132	100.0

Source: Primary household survey (Dec. 2019 & Jan. 2020)

The survey shows that cotton is cultivated across different size of holdings, based on the obtained composition of the sample of cotton cultivating households. We present the status of landholdings of these households both in terms of how much land they own (ownership holdings) and how much they cultivate (operational holdings)[5]. More than two-thirds of the cotton cultivating households own marginal and small holdings of land and a few of them are landless (see Table 3.2). In terms of land cultivated, more than half of the cotton farming households operate small and marginal holdings of land. In other words, half of the farmers/families engaged in cotton cultivation are very small-scale producers. However, the proportion of bigger farmers in cotton cultivation seems to be higher (46 per cent) than their share in total farming households (11 per cent). This pattern partly reflects the capital-intensive nature of cotton where not all the small and marginal households can manage to mobilize financial resources to produce cotton.

When we disaggregate districts (see Tables 3.3 and 3.4), Adilabad alone has higher share of bigger farmers (semi-medium and medium), which tilts the overall composition of sample slightly away from the small and marginal households. The remaining three districts have predominantly small and marginal cotton cultivators. Among all, the households with marginal operational holdings show relatively lower level of engagement in cotton cultivation. However, on the whole, in absolute numbers small farmers predominate cotton cultivation followed by semi-medium, medium, marginal and large farmers (see the last column in Table 3.2).

As mentioned, the survey was purposive and the process of capturing all classes of farmers might result in a selection bias towards those classes which are otherwise present in disproportionately low numbers. Hence, there is a possible over-representation of larger classes of farmers in the sample (see footnote 4). Further, the marginal and small farmers are more among the new entrants in cotton cultivation (see Table 3.5) which suggests

5. An operational holding or the quantum of land cultivated could be different from the land owned owing to the addition of leased-in land or reduction of leased-out or fallow land, among others.

Table 3.3

Percentage distribution of sample households based on size of agricultural land owned across districts and social groups

		Households based on Total agricultural land						
		Landless	Marginal	Small	Semi-medium	Medium	Large	Total
District	Adilabad	6.3	9.4	31.3	31.3	21.9	0.0	100
	Gadwal	3.5	21.6	45.9	16.2	2.7	0.0	100
	Nalgonda	6.3	9.4	46.9	31.3	3.1	3.1	100
	Warangal - Rural	0.0	22.6	54.8	19.4	0.0	3.2	100
Caste Category	SC	18.9	29.7	35.1	16.2	0.0	0.0	100
	ST	0.0	7.1	21.4	57.1	14.3	0.0	100
	BC	3.0	13.6	54.5	22.7	4.5	1.5	100
	General	0.0	0.0	46.7	20.0	26.7	6.7	100
	Total	6.8	15.9	44.7	24.2	6.8	1.5	100

Source: Primary household survey (Dec. 2019 & Jan. 2020)

increasing spread among these sections. More households with small and marginal operational holdings have started cultivating cotton within the last 15 years, whereas more among the larger ones started before 15 years. This, on one hand, suggests cotton's disproportionate spread until recently; on the other, the growth in cotton acreage in the recent years is also due to the adoption of cotton cultivation by the small and marginal farmers, and perhaps their share among the cotton growers might increase further. To conclude, more than half of the cotton growing families own and operate small and marginal holdings of land; some operate but do not own

Table 3.4

Percentage distribution of sample households based on size of land operated across districts and social groups

		HHs based on Total cultivated/operated land					
		Marginal	Small	Semi-medium	Medium	large	Total
District	Adilabad	0.0	9.4	37.5	53.1	0.0	100
	Gadwal	16.2	59.5	16.2	8.1	0.0	100
	Nalgonda	15.6	40.6	34.4	6.3	3.1	100
	Warangal - Rural	16.1	54.8	22.6	3.2	3.2	100
Caste Category	SC	27.0	43.2	16.2	13.5	0.0	100
	ST	7.1	7.1	57.1	28.6	0.0	100
	BC	7.6	47.0	30.3	13.6	1.5	100
	General	0.0	46.7	13.3	33.3	6.7	100
	Total	12.1	41.7	27.3	17.4	1.5	100

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Table 3.5

Number of years since the households engaged in cotton cultivation

HHs based on Operational holdings	Current Year	1 to 5 Years	6 to 10 Years	11 to 15 Years	More than 15 years
Marginal	9.1	9.1	27.3	9.1	27.3
Small	16.7	25.0	13.9	11.1	30.6
Semi-medium	0.0	30.0	10.0	20.0	36.7
Medium	0.0	13.0	17.4	8.7	60.9
Large	0.0	50.0	0.0	0.0	50.0

Source: Primary household survey (Dec. 2019 & Jan. 2020).

Note: Rows do not add up to 100% because this table excludes households engaged in cotton seed cultivation

any land. In fact, barring Adilabad district, more than two-thirds cotton producers operate small and marginal holdings. The increasing adoption of cotton cultivation in the recent years by these households has significantly contributed to the growth in area of cotton witnessed in these years.

3.1.2. Women and Ownership of Land

Gender-wise ownership pattern of land within households engaged in cotton cultivation reveals that majority of the land is owned by men in the families. As shown in Table 3.6, women in majority of the households (about 55 per cent) do not have ownership rights in household land. The remaining households had women owning either part or whole of the land, i.e. women possessed land titles. Only women own land in about 4 per cent households and both women and men own land in about 40 per cent households. This is in line with patriarchal norms of the society where ownership rights in land and other property follow patrilineal inheritance. Usually when women inherit land it is in absence of male siblings and/or in marriages where the couple adopt matrilocal residence. In other cases, the ownership

Table. 3.6

Women and ownership of land among cotton farming households

		% Households in which ownership of land rests with			Share of area owned by women in total land owned (all HHs)	%area owned by women excluding HHs without women's ownership
		Only men	Only women	Both men & women		
Operational holdings	Marginal	78.6	0.0	21.4	14.2	44.3
	Small	68.0	4.0	28.0	16.0	47.2
	Semi-medium	38.9	8.3	52.8	25.1	47.5
	Medium	38.1	0.0	61.9	26.8	34.0
	Large	50.0	0.0	50.0	14.3	33.3
Caste Category	SC	63.3	6.7	30.0	22.2	44.6
	ST	57.1	0.0	42.9	24.9	47.4
	BC	56.3	4.7	39.1	22.7	43.2
	General	33.3	0.0	66.7	16.9	29.2
Total		55.3	4.1	40.7	21.7	40.7

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Table 3.7

Share of Households Leased-in Land on Fixed-rent Tenancy

Land size categories (Own agricultural holdings)	No. of households	% HHs leased-in land (fixed rent)	Share of leased-in land (fixed rent) in total cultivated land
Landless	9	100	100.0
Marginal	21	33	38.7
Small	59	32	22.9
Semi-medium	32	28	17.4
Medium	9	22	3.2
Large	2	100	38.9
Total	132	36	26.0

Source: Primary household survey (Dec. 2019 & Jan. 2020)

titles were distributed among family members including both genders, also to avoid attracting land ceiling regulations, besides bestowing social security to women through property ownership. The latter is somewhat more common among the better off families. Very few women among the SC households or households operating less land have ownership rights in land. Overall, just about one-fifth of the total area of land area is owned by women. This share is about 40 per cent if we exclude households in which women do not possess land. Gendered nature of ownership of land sits in remarkable contrast considering that women contribute more labour in cotton farming, as discussed in chapter 4. Though households rather than individuals function as socio-economic units, ownership of land and its control rests mostly with men. However, consideration of female household labour and other factors do influence the choice of land use including the type of crop cultivated. Among the sample of cotton cultivating households, female headed households were only about four per cent, and none of the landless households that leased-in land for cotton cultivation were headed by females.

3.1.3. Land and Tenancy among Cotton Producers

A comparison of households' own agricultural land and cultivated land shows that the structure of operational holdings shifts away from marginal holdings, wherein the size of other categories becomes larger. This suggests a tendency among some cotton farmers towards increasing the scale of operation by leasing-in land. This is also evident in the number of households that lease-in land. Landless households too engage in cotton cultivation by leasing in land. Tenancy is prevalent across households irrespective of the size of agricultural land they own. Table 3.7 shows that more than one-third (36 per cent) of cotton farming households lease-in land accounting for about three-fourth of the total cultivated land by these households[6]. The incidence of tenancy is more among the marginal and small

6. According to NSS data for the year 2012-13, 16.5 percent households leased-in land, which accounted for 18.59 percent of the total land owned and 13.7 percent of total land operated in Telangana (see NSS Report No. 571: Household Ownership and Operational Holdings in India, 2015). Apart from a possible increase in the incidence of tenancy in the region, there seems to be higher demand for leasing-in land for cotton cultivation which reflects in the incidence levels of tenancy among the cotton cultivating households.

holding households. Importantly, considerable number of landless households (about 7 per cent) too cultivated cotton by leasing-in land. The component of paid-out cost towards rent on land, thus, increases the cost of production among the landless and tenant farmers who constitute a significant share of small and marginal farmers. A few households in the sample also reported leasing out of land, because of financial and other constraints in undertaking cultivation in whole of their landholdings.

Predominant form of tenancy among these households is fixed-rent tenancy wherein rent is paid in cash and in advance before the cultivation begins. Share-cropping tenancy seems to have largely declined and we found only three households that have engaged in this form of tenancy. However, these sharecropping arrangements were made in case of food grain crops and not for cotton cultivation. Rent for the leased-in land is substantial and it varies between districts and between irrigated and unirrigated land. Usually unirrigated land is leased in for commercial cotton and irrigated land for cotton seed cultivation. Households that lease-in irrigated land for seed cultivation in the district of Gadwal pay huge amount of rent ranging from Rs. 25,000-30,000. The average rent, including dry and wet lands, in Gadwal is the highest (Rs. 22,500) followed by Adilabad (Rs. 17,500), Warangal-Rural (Rs. 13,500) and Nalgonda (Rs.7,000).

Prevalence of tenancy is much higher in Adilabad, followed by Nalgonda, Gadwal and Warangal (see Table 3.8). The pattern observed in Adilabad is somewhat different where relatively more better-off farmers lease-in land, including from ST communities. The operational holdings are relatively large in this district and high incidence of tenancy makes them even bigger compared to other parts of the state. Nalgonda also has high prevalence of tenancy and the villages covered in this survey have shown a high demand for tenancy of rainfed land for cotton cultivation. Cotton seed cultivation sustained the demand for tenancy of irrigated land in Gadwal; some of the landless households have engaged in cotton seed cultivation by leasing land.

In line with the landless, marginal and small holding households, the incidence of tenancy

Table 3.8

District-wise and Social Group-wise Share of Households Leasing-in Land on Fixed-rent Tenancy

District	% HHs leased-in land (fixed rent)	Share of leased-in land (fixed rent) in total cultivated land
Adilabad	59.4	
Gadwal	24.3	
Nalgonda	40.6	
Warangal - Rural	22.6	
Social Group		
SC	43.2	40.0
ST	42.9	17.2
BC	34.8	26.8
General	21.4	13.2

Source: Primary household survey (Dec. 2019 & Jan. 2020)

(leasing-in land) is more among the corresponding backward social groups such as SCs, STs and OBCs (see Table 3.8). These groups disproportionately bear the brunt of higher production costs in cotton because they are land poor and as a result incur higher expenditure on account of land rent. Further, as shown in the subsequent section on credit, these households cannot access institutional credit for the operation of the leased-in land, and thus have to rely more on informal credit accessed at higher interest rates.

3.2. Cotton Farming: Inputs, Returns and Risks

In this section we examine the sources of and access to credit and inputs, the markets and market players for these, and the nature of relationship between farmers and these market players. It will also discuss the particular risks, vulnerabilities and returns in cotton production, and the experiences of farmers.

3.2.1. Institutional Credit and Informal Credit Relations

Farmers depend on credit for meeting the expenses of cultivation as well as for consumption needs. Lack of capital forces them to enter into exploitative and dependent relations with informal lenders and input retailers for cash loans and inputs on credit. Facilitating access to formal credit was intended to break this nexus of dependence and improve the bargaining power of the farmers in input and produce markets, besides enhancing the capacity for productive investment. Though access to formal credit through public banks has improved over time, this area remains fraught with issues that continue to persist. Even when farmers access formal loans for cropping, household consumption needs force them to maintain credit relations with informal lenders. This dependence aggravates the problem of indebtedness especially when farmers incur crop losses and fail to clear formal credit and thus

Table 3.9

Sources of Credit: Access to Institutional and Informal Sources of Credit in the Agricultural Year (kharif) 2019-20 by Cotton Farmers

Categories	Institutional sources		Non-institutional/Informal sources	
Operational holdings	% of HHs accessed crop loans from public banks	Amount of loan (average)	% of HHs borrowed for cotton cultivation outside banks	Average loan (Rs) per cotton farming household
Marginal	31.3	54000	93.8	83333
Small	41.8	87391	87.3	113517
Semi-medium	77.8	99357	88.9	87359
Medium	78.3	141944	82.6	125853
Large	100.0	550000	0.0	--
Districts				
Adilabad	78.1	139920	78.1	104452
Gadwal	29.7	77273	97.3	114986
Nalgonda	50.0	117250	90.6	68955
Warangal - Rural	77.4	103875	77.4	130625
Total	57.6	114697	86.4	104259

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Table 3.10

Reasons for not Accessing Formal Credit (crop loans) by Households in 2019-20

Operational holdings	Outstanding crop loan	Land title issues	Leased-in land	Did not apply for a loan	Bank did not sanction	Any other reason
Marginal	25.0	0.0	12.5	25.0	0.0	37.5
Small	20.0	16.0	8.0	12.0	8.0	36.0
Semi-medium	28.6	0.0	14.3	14.3	0.0	42.9
Medium	33.3	0.0	33.3	0.0	0.0	33.3
Large	NA	NA	NA	NA	NA	NA
Districts						
Adilabad	16.7	0.0	33.3	16.7	0.0	33.3
Gadwal	42.1	21.1	0.0	5.3	5.3	26.3
Nalgonda	0.0	0.0	25.0	8.3	0.0	66.7
Warangal - Rural	16.7	0.0	0.0	50.0	16.7	16.7
Total	23.3	9.3	11.6	14.0	4.7	37.2

Source: Primary household survey (Dec. 2019 & Jan. 2020)

lose access to fresh credit. They strive to continue cropping and recover from losses through this vicious cycle of dependence on informal credit. However, informal credit relations have also brought dynamism to the agricultural economy, while thriving in uncertain market conditions and deficiency of state's presence. Several studies have in the past highlighted this particular area for addressing the issues of farming. This study shows the persistent problem of formal and informal credit whose volatility is fostered by the uncertain returns on the capital-intensive cotton production.

There is a large gap in access to formal credit for cropping. Only about 60 per cent of households surveyed availed crop loans from banks in the kharif season 2019-20 (see Table 3.9). The problem of access to formal credit is more among the small and marginal holding households which form the major bulk of cotton farming households. About two-thirds of these households did not access crop loans. Districts also show a stark difference in access to farm credit. Adilabad and Warangal have relatively better access to formal credit. Gadwal and Nalgonda fare worse in provision of institutional credit, denying it to more than half of the households; a large share of farmers lost fresh access because of outstanding loans (discussed below). Perhaps this disparity reflects the wellbeing/distress of the farming communities besides the level of governance and responsiveness as well as the lobbying strength of the farmers of the respective districts.

Various factors and technical impediments underlie lack of access to formal credit. More specifically, inability to clear an outstanding loan is a major cause for the denial of fresh loans (see Table 3.10). This is the case for many households which reported that they have 'renewed' the loan (counted under 'any other' reason in the table). These farmers did not access fresh loans, but they officially figure under those accessing fresh loans. This is because the outstanding loan is converted into a fresh loan by the banks after recovering the interest. Incidence of this pattern appears to be in large scale. When asked why they did not access a crop loan, farmers responded that

Table 3.11

Gender-wise Ownership of Land and Access to Institutional Credit

Categories	Institutional sources		Non-institutional/Informal sources	
Ownership of land in the HH	% of HHs accessed crop loans from public banks	Amount of loan (average)	% of HHs borrowed for cotton cultivation outside banks	Average loan (Rs) per cotton farming household from private lenders
Female only	100.0	79400	100	97000
Male only	58.8	96325	87	101424
Both	62.0	144097	84	95393
Total	61.8	114697	86	98825*

Source: Primary household survey (Dec. 2019 & Jan. 2020) * The total (average) does not match with the total (average) in table 3.9 because this table analyses credit based on gendered nature of land ownership and thus excludes landless households.

they have only 'renewed' the loan – which in practice means they had only cleared the interest on the principal, and banks had converted the outstanding into a fresh loan. This practice is particularly widespread in Nalgonda and Gadwal. Effectively, farmers do not avail a fresh loan, but only keep paying the interest on outstanding loans. Many also hope that their pending loans might be waived by the government as a relief measure, as was done on some occasions in the past. Other obstacles to accessing loans are: lack of land title with the actual/cultivating farmer in cases of inherited land from parents and ancestors or after division of land informally; tenant farmers are denied credit for the same reason[7]; some are unaware of the whole process and no support system to and therefore do not apply for a loan and some are rejected citing documentation issues or jurisdiction etc. There has been a recent push by the government to extend collateral-free agricultural loans and recently the amount of such loans was also increased. However, tenant farmers have not been able to access them in this region.

Access to institutional credit did not vary much among households based on the gender of the person who has ownership rights (title) of the landholding (see Table 3.11). Households in which land is owned by both men and women have similar levels of access to institutional credit compared to those where only men have legal ownership. However, it is noteworthy that households that have land exclusively owned by women have better access to institutional credit – all of them took crop loans from banks, though the number of such households is low.

Most of the farmers depend on loans from informal sources, including many who access formal credit. This is clearly reflected also among the surveyed households - nearly 90 per cent of the households borrowed money for cotton farming from non-institutional sources i.e. from informal lenders (see Table 3.9). Incidence of informal borrowing is highest among the households operating marginal and small holdings. Relatively higher share of loans is drawn from informal sources by these sections of farmers, which in turn manifests in higher interest rates, debt-burden and dependency.

Districts such as Nalgonda and Gadwal which

7. In the erstwhile state of Andhra Pradesh, an Act (2011) was enacted to enable tenant farmers to access formal credit and other state support. However, this was not implemented after the formation of Telangana state.

Table 3.12

Share of Households that Cleared Informal Credit Borrowed for Cotton Production

Operational holdings	Yes	No	Partly
Marginal	40.0	46.7	13.3
Small	50.0	41.7	8.3
Semi-medium	31.3	46.9	21.9
Medium	42.1	26.3	31.6
Large	NA	NA	NA
Districts			
Adilabad	48.0	28.0	24.0
Gadwal	50.0	47.2	2.8
Nalgonda	48.3	24.1	27.6
Warangal - Rural	16.7	66.7	16.7
Total	42.1	41.2	16.7

Source: Primary household survey (Dec. 2019 & Jan. 2020)

perform poorly in access to formal credit largely depend on informal money lenders. Usually the interest rates are very high ranging between two to three per cent per month (24 per cent to 36 per cent per annum). On an average more than Rs.100,000 per household was borrowed for cotton cultivation from private lenders (see table 3.9). Even the marginal households borrowed more than Rs. 80,000 on an average. Considering gender and ownership of land, all households borrowed money for the cultivation of cotton irrespective of whether men or women members of the family owned land (see Table 3.11).

We have captured how many households could manage to clear their loans drawn for the cultivation of cotton in particular. About 40 per cent of all the households that borrowed money for cotton cultivation from informal sources had cleared their loans fully and 16 per cent partially after selling the cotton produce this kharif season (see Table 3.13). A significant number (about 40 per cent) either could not repay or were waiting their produce to be sold. We also explored the levels of households' pending loans/indebtedness in general, which is discussed in the section on returns from cotton cultivation.

An important feature of this informal lending is its link with other input and produce market transactions (discussed in detail in chapter 5). Many of the money lenders are also input sellers and/or commission agents at the market yards or traders (formal or informal) of the cotton produce. They maximise their profits by ensuring that a client in one market is also their client in another and credit is used to lock the clients in interlinked markets. Input sellers also sell inputs on credit. Credit, both in cash and kind (inputs) tie down the farmers into obligations of seeking the services of a common player in multiple markets. For instance, if a money lender is an input seller or a produce trader, he also creates an obligation on the borrower to buy inputs from him or sell the produce to him. Thus, they not only charge interest on the credit, but also make profit in trading inputs and outputs. These interlinked markets ultimately reduce the bargaining power of the farmers both in input and output markets and maximize the margins of

the market players. Farmers lose the ability to buy the particular seed or pesticide (inputs) of their choice or sell the produce to the highest bidder in the market, and thus derive depressed returns on the crop. This feature of agricultural markets had been an important concern since decades (see Harriss, 1982; 1984). Rising indebtedness and interlinks in credit and other markets were highlighted among the important causes of the farm crisis and farm suicides in Telangana about two decades ago (Parthasarathy and Shameem, 1998; Revathy, 1998; Vakulabharanam, 2004). Surprisingly, these market relations still persist and seem to thrive even as capital-intensive agriculture has been expanding. Of the total number of households which borrowed money for cotton cultivation, nearly three-fourth reported that they are obligated to sell the cotton produce to the lenders (see Table 3.13). This obligation of selling the produce is invoked by the input creditors and money lenders as a justified way to recover cash loans. Additionally, this practice constructs an obligation on the part of a client in credit market to be client in produce market. It invokes a moral burden on part of the client to demonstrate loyalty to the lender by selling the produce, which in turn renews the promise of future credit and restores faith in the future of the debt relationship. Therefore, many actually sell the produce to the lenders to retain the credit relationship, and some negotiate and sell it to state agencies or others risking future credit (discussed in chapter 5).

The global supply chains thrive on specialization of activities at many levels and link different actors in the chain whereas interlinked markets entail common players in multiple market roles and thus consolidate their economic and bargaining power. Notwithstanding this contrast, the cotton supply chains are well articulated with the local exploitative interlocked markets in Telangana.

3.2.2. Farm inputs, Information and Farmers Choices

"Although the most lucrative crop for many, cotton is also a notoriously unreliable earner because it

Table 3.13

Share of HHs that were Obligated to Sell the Cotton Produce to/through the Money Lender

Operational holdings	% of HHs
Marginal	86.7
Small	70.2
Semi-medium	73.3
Medium	73.7
Large	0.0
Districts	
Adilabad	69.6
Gadwal	80.0
Nalgonda	86.2
Warangal - Rural	54.2
Total	73.9

Source: Primary household survey (Dec. 2019 & Jan. 2020)

3.1


3.2

Photos 3.1 & 3.2: Agricultural inputs retail shops - cotton farmers access seeds, pesticides and fertilizers from these private retailers. Input retailers also play an important role in information on input technologies, financial and input credit, and purchasing cotton produce

is input-intensive, vulnerable to numerous pests, and sensitive to market fluctuations" (Stone, Flacks and Diepenbrock, 2013:1). This view is held and often expressed both by experts and farmers, which is based on the last two to three decades of experience of cotton farming in the region (also see Parthasarathy and Shameem, 1998; Revathy, 1998; Vakulabharanam, 2004). One, high intensity of inputs makes it capital-intensive as all the inputs are procured from the market. Two, uncertainties of rainfall and pest infestation cause large yield fluctuations, beside affecting the quality of the produce. Three, global and domestic demand and supply of cotton and international prices induce high instability in market price of cotton produce. These three dimensions, which are mostly common across crops, manifest more prominently in cotton, and thus cause higher risk and vulnerability of cotton farmers.

Inputs for cotton cultivation such as seed, fertilizers, pesticides and herbicides have to be purchased privately from licensed retailers by the farmers. While the government provides subsidy on fertilizers, there is no such provision for seed, pesticides and herbicides. Seeds of some crops are also supplied by the state cooperative agencies, but not in case of cotton. As farmers cultivate hybrid cotton, the seed has to be purchased every time before sowing a fresh crop. The cost on Bt cotton seed is high, though regulated in the recent years. It was exorbitant during the initial years. The state government (the erstwhile government of Andhra Pradesh) has regulated and put a cap on price of the Bt cotton seed since 2006, despite legal tangles with Mahyco Monsanto Biotech Ltd. on the issue (see Sadashivappa, 2009)[8]. The seed prices varied across states till 2015. The government of India through a Cotton Seed Price (control) Order fixed a uniform price across states and decided to revisit the price every year in the month of March[9]. The extent of use of both seed and pesticides, which constitute significant share of production cost, is also not constant in terms of the quantity per unit of land, unlike, for example, fertilizers. Often farmers are forced to sow seed more than once depending on the rate

8. The trait value was initially reduced from Rs. 1200 to Rs.900, and later the state government issued a directive to cap the price of cotton seed packet of 450 grams at Rs 750, which was about half of what it was sold previously.
9. It reduced the trait value from Rs. 183 to Rs. 49 and fixed a uniform price for a 450 grams of cotton seed of Bt-I at Rs. 635 and Bt-II at Rs. 800.

BOX 1 A FARMER FROM NALGONDA DISTRICT

Ambanna is a farmer from a village in Koppole Mandal, Nalgonda District. He owns 10.5 acres of land, out of which he cultivates cotton on 6 acres, 'bathayyi' on 3 acres on and paddy on 1.5 acres. The entire land is black soil. He has been cultivating cotton for 30 years. He began using Bt seeds in 2004, and for the first three years it gave good yield without the use of any pesticides. He said, "Farmers have benefited a lot from Bt. We had massive debts and monetary returns were not good before Bt cultivation. Bt was more lucrative. But the quality of the Bt is declining now." He has two borewells. He says that even cotton cultivation requires good amount of water and borewell water is used before sowing the seed.

All three of his children stay in Hyderabad. One of his sons is a constable and the other an engineer. His daughter has just entered the police force in the post of a constable. Ambanna and his wife are both farmers and do not work on others' fields.

He said most of the land he operates is used for cultivating cotton now, and even if there are pests and losses they still adhere to cotton. Earlier, other crops like 'Moong dal' and red gram were cultivated, but they proved highly unprofitable and disease-prone. Though cotton needs water it can still a rainfed crop, other crops need large and timely supply of water.

Expressing his confusion over the choice of seeds and other inputs he said, "most of the information and suggestions about the pests and pesticides are taken from the pesticides' dealers who visit the fertilizer shop in the village. They even visit the fields upon farmer's request. The risk in cotton cultivation is due to pesticides, though someone is there to suggest it is impossible to know if a pesticide works on a pest or not until it is used. Seeds are bought without much guidance. It depends on the hype of the seeds and there are so many people to suggest which seeds to use but it is highly unreliable. The company dealers suggest something, others suggest something else. It is quite confusing". He sowed three different brands this time and says there is no visible difference in the growth of the plants or number of bolls.

Contrary to one Bhopal Reddy's statement that this year's yield is higher than last year, Ambanna says that due to heavy rains he only got 10 quintals per acre unlike last years' 12 quintals. We can infer that one of the factors for this could be the difference in soil type.

Out of the total produce, he sold the first 30 quintals to input creditor at Rs. 5000 and the second 30 quintals to CCI at Rs. 5400. He still has 2 more quintals to be sold. Returns from his cotton cultivation would be around Rs. 150,000.

of germination which is affected by either scanty or excess rainfall after sowing, beside the quality of seed. Similarly, unanticipated levels of pest and insect infestation raise the need and use of pesticides and insecticides, increasing production cost. Inability to meet such demands results in loss of yields. Thus, cost of cotton cultivation significantly varies year-on-year for the same plots of land depending on input demand and between farmers depending on their ability to meet such demand (discussed below).

Farmers in our study reported sowing as many as three times because of sparse germination. This sometimes results in using different seed because the brand of seed that was bought in the first instance may be short of supply or the input-creditor may offer only a particular seed

from of his stock. A farmer in Nalgonda first sowed *Rasi* seed this kharif, but the crop failed because of excessive rain. His input creditor did not give the same seed for another round of sowing. The farmer said that "input retailers do not give the seeds we ask for. Whatever the distributor offers them, they sell us". This seems to be the practice across districts. A licensed input retailer in Chevella (Vikarabad district) was candid and explained that the distributers offer their products in bulk without any advance charge to the retailers. It is also true that the particular seeds or pesticides that are low on demand in the market are offered this way. He said that "We have to pay at least part of the price in advance for those which are in demand. When clients seek inputs on credit, we can afford to give them on credit only those products on which we did not pay upfront".

It should be noted that retailers charge interest on credited inputs, though they do not buy them in the first place. The margins are usually high as they sell these inputs at marked price citing the offer is because of credit and yet additionally charge interest on this price. This practice typically manifests in farmers being unable to choose particular brands of inputs (possible when they pay upfront for inputs) and thus forced to accept whatever is being offered if the inputs are sought on credit. A farmer in Adilabad said he bought the seed of his choice in the first instance. He was forced to sow thrice because the seeds did not germinate. The seeds he sowed subsequently were different and were bought on credit, and thus he ended up sowing two different seeds mixed in the same plot. This results in non-uniform growth of the plants at different stages in crop cycle affecting the required activity on the crop. In Gadwal, a farmer recalls that the seeds that failed the quality tests in the laboratories were sold by an organiser to farmers in a village in Manapadu Mandal, which were cultivated in over 10 acres. The entire crop failed and farmers registered a complaint with the police against the organiser. The case was resolved in favour of farmers and the organiser was asked to pay Rs. 10,000 per acre as compensation.

Given the aggressive promotion of seed by the big companies through 'promoters', distributers, and retailers, the AEOs do not figure in the process of seed adoption by farmers. They do make efforts to instruct farmers on the use of fertilizers and pesticides, but these efforts are limited. Farmers often explain the nature of the


3.3


3.4

Phots 3.3 & 3.4: There is growth in the pink boll-worm and other infestations. Bt cotton seeds have become ineffective in resisting pink bill worms

Table 3.14

Share of Households (%) that Sowed Multiple Types/brands of Bt Cotton Seed this Year

		1 type of seed (seed brands)	2 types of seed (seed brands)	3 types of seed (seed brands)	More than 3 seed brands	Total
Operational holdings	Marginal	10.0	70.0	20.0	0.0	100
	Small	30.0	17.5	32.5	20.0	100
	Semi-medium	26.5	11.8	29.4	32.4	100
	Medium	18.2	9.1	40.9	31.8	100
	Large	0.0	50.0	50.0	0.0	100
Districts	Adilabad	6.5	12.9	48.4	32.3	100
	Gadwal	100.0	0.0	0.0	0.0	100
	Nalgonda	9.4	18.8	37.5	34.4	100
	Warangal - Rural	22.6	35.5	25.8	16.1	100
Total		24.1	19.4	32.4	24.1	100

Source: Primary household survey (Dec. 2019 & Jan. 2020)

problem to the pesticides' shopkeepers and take any product suggested by them. As noted in the case of seeds, available pesticides are thrust on farmers on credit by the retailers. AEOs consider them profit makers and say that shopkeepers often prescribe high doses of pesticides. They say that these pesticides work because they kill everything including the quality of the crop and the soil which would affect future growth. On the other hand, shopkeepers consider these AEOs to be carrying outdated knowledge and impractical solutions. An agricultural input retailer in Adilabad town said that AEOs do not update themselves with the evolving technology and hence lack knowledge. Most of the information about farming and solutions to its recurrent problems goes to the farmers from pesticide shop owners only. This retailer claims to his credit a degree in agricultural sciences which makes his claims and prescriptions more legitimate. The government has also decided to make it compulsory for the shopkeepers to have a training in agricultural sciences to get a license in the trade. They have taken initiatives to provide short term certified courses.

Some of the input retailers, like the one (referred above) from Adilabad, hail from traditional merchant communities. Their traditional roots are in produce trade as commission agents and traders and, like in his family's case, expanded into input retail as well, whereas the retailor in Chevella belong to traditional peasant communities. The latter's community background also plays its part in acceptance of their advice. The input retailer from Chevella says that he also cultivates the same crops and uses the same seeds and pesticides. He gave an example saying that "we sowed three different brands of cotton seed on my family farm and I suggested the same to my clients". He also added, "farmers do come to us describing the problems with the crop and the types of pests. These days they also come with visuals shot on their mobile phones. We try to prescribe what we learned from the distributors and when there are new issues, we consult them. I even consult agricultural officers".

A farmer from Nalgonda expresses helplessness of farmers about the confusion and unreliability of information on inputs, which is

Table 3.15

Share of Households (%) that Repeated Seed Types/brands Sowed in the Previous Year

		Repeated 1	Repeated 2	Repeated 3	Repeated more than3	None	NA
Operational holdings	Marginal	36.4	36.4	9.1	0.0	18.2	0.0
	Small	35.0	20.0	0.0	2.5	25.0	12.5
	Semi-medium	25.0	37.5	9.4	0.0	28.1	0.0
	Medium	31.8	31.8	9.1	13.6	9.1	4.5
	Large	50.0	0.0	0.0	0.0	0.0	50.0
Districts	Adilabad	25.8	41.9	16.1	9.7	6.5	0.0
	Gadwal	47.1	0.0	0.0	0.0	35.3	5.9
	Nalgonda	15.6	21.9	3.1	0.0	40.6	18.8
	Warangal - Rural	48.1	40.7	0.0	3.7	7.4	0.0
Total		31.8	29.0	5.6	3.7	21.5	6.5

Source: Primary household survey (Dec. 2019 & Jan. 2020)

a common experience across districts: "most of the information and suggestions about the pests and pesticides are taken from the pesticides' dealers. They even visit the fields upon farmers' request. The risk in cotton cultivation is due to pesticides, though someone is there to suggest it is impossible to know if a pesticide works on a pest or not until it is used. While some pesticides might have worked really well in one farm, they may not give the same results in the neighbour's field". High levels of insect and pest infestation and lack of time in accessing reliable information force farmers to depend on informal sources of information. Dependence on input retailers due lack of running capital for most of the farmers deprives them the choice of inputs as they are sought on credit.

Major change in terms of shifts in technology has been in seeds and pesticides, which constitute large part of the cotton production cost. In the recent years, herbicide use has also become an additional input cost, which is used to contain weeds and substitute labour use. The expansion of cotton cultivation in the region from the 1990s accompanied 'waves' of agricultural technologies, starting with hybrid seeds, followed by insecticides and then genetically modified Bt cotton seed (Stone, Flacks and Diepenbrock, 2013). Though Bt cotton proved resistant to pests (pink boll worm in particular) during the initial years, there is increasing infestation of pests and insecticides in the recent years. Longitudinal studies observe the growth in the incidence of non-target pests like aphids and whiteflies (Stone, 2012; Flacs, 2019). Several studies have focused on technological innovation and their adoption by farmers, especially with the introduction of GM technology. In an uncertain market environment, rapid technological change and unreliable information, farmers resort to 'herding' or 'copycat decision making' by imitating others (Stone, Flacks and Diepenbrock, 2013). Markets are flooded with more than thousand brands of Bt cotton seeds since its introduction in India (Stone, 2012; Flacs, 2016). There is no reliable source of information on the advantage of one brand of seed over the other or the effectiveness of a particular pesticide/insecticide depending on the nature of

infestation. Despite acquiring knowledge on the various activities of cotton farming, the market dynamics of seed and pesticide technology preclude an assessment of their quality or their precise advantage/disadvantage. There are too many brands of every input and farmers desperately try newer products every year. State has hardly created mechanisms to clear confusion on the existing or new technologies, nor has it promoted reliable and sustainable technologies.

Farmers respond to such lack of reliable information and follow multiple strategies in choosing particular inputs ranging from sheer dependence on the input retailors to consulting and emulating others. Agricultural extension officers rarely appeared to provide any significant information. We asked farmers about the different sources of information and influence in the choices they make in adoption of technology in cotton. In the selection of cotton seed, most of the farmers opt for more than one type (or brand) of seed to avert risk of depending on one particular brand and to avoid complete loss due to bad results from one particular seed. Multiple seeds are used by individual farmers also because of lack of choice when they depend on retailers for seed on credit, as discussed above. Table 3.14 shows how farmers sow different types of seed in the same plot or different plots of their landholding. When it is in the same plot, different seeds are separately sown which they can be clearly marked and recognized. Only about one-fourth of the households had sown one brand of seed and three-fourths sowed more than one seed. It is remarkable that more than half of the households sowed at least three or more types/ brands of seed. This strategy is prevalent across classes of farmers and districts, barring in Gadwal where farmers mostly sow only one brand of seed even for commercial cotton. Cultivation of multiple brands of cotton seed should have helped famers gain first-hand experience of which seed is productive and pest resistant than others, which in turn should help them in making informed seed choices. However, their experience does not suggest any clear distinction between seeds to help them zero down on one or two types of seed. As a farmer from Nalgonda who sowed three different brands on the same plot said, there was no visible difference in the growth of the plants and the boll number.

However, farmers mostly prefer to go with the dominant brands in the market. We asked them how many of the seeds (particular name-brand) cultivated this time were cultivated in the previous year to know if they decided to drop certain seeds and continued some. More than half of the households repeated at least one or two seeds this year (see Table 3.15). About one-fifth of them did not repeat any of the seed cultivated in the previous year. Many of them did not repeat the previous brand of seeds because of losses incurred in the previous year, followed by other reasons such as low germination rate, unavailability of the seed this year in the market, and the input creditor imposing another seed. Tables 3.14 and 3.15 do not include farmers cultivating seed cotton in Gadwal. Gadwal which has large number of cotton seed cultivators sow the seed that the 'organizer' offers. The organizer, on behalf of the company, enters contracts with farmers and provides the seed that the company plans to produce. Majority of them cultivate only one seed, and remarkably nearly half of them did not repeat the previous seed. The major reason for not repeating a particular seed was due to the decision of the organizers, which in turn is based on the seed companies' decision to produce a different one.

This study further maps the sources of information and knowledge about cotton farming in general, and specific inputs in particular. Farmers mostly had more than one source of information. Information and education about

cotton farming in general was acquired mostly within the villages and by observing others. But among the various sources of information and influence with regard to inputs particularly seed, pesticides and herbicides, input retailers figured as the main source for more than 40 per cent of households. Though asked separately about the source of information and source of influence, input shop keepers were prominent in both.

3.3. Profits, Losses and Indebtedness among Cotton Producers

Eeranna from a farmer's family in Nalgonda district, cultivated cotton in three and half acres under rainfed conditions. The total cotton produce was only 13 quintals, which is quite less in his own experience with cotton cultivation, and this was due to erratic rainfall and high levels of pest this year. They have adopted Bt cotton ten years ago. Eeranna said that "the pink bollworm infestation is now rampant, while there was no trace of worm in the initial 4-5 years. The worm eats the seed from inside and it hampers the growth of the cotton. Costs of fertilizers, pesticides and labour are too high against the low yield and less price for the produce. The lack of water sources in this village is one reason why we cannot opt any other crop and are stuck with cotton. Castor used to be one of the main crops earlier before cotton came". The quality of cotton was also affected negatively due to untimely rains in the harvest season. The produce did not qualify public procurement (CCI) standards and this family sold the produce at much less price than the minimum support price set by the government and incurred a loss of around Rs. 60,000 even without considering family labour and other imputed costs (see the case study 1 for details).

BOX 2 A SMALL FARMER FROM NALGONDA DISTRICT

Eeranna is a farmer from a village in Nampally mandal, Nalgonda district. This district is one of the dry districts of Nalgonda. There are no canals that pass through this district and the borewells are dysfunctional. Eeranna belongs to Yadav community and falls under OBC category. He owns 5 acres of land in total. Out of these he is growing cotton in three and half acres, lemon in half an acre and paddy in another half an acre of another. There is no direct supply of water to the farm. Hence, it is largely rain fed agriculture and the lemon farm which needs a lot of water has completely dried out because of lack of water. This farmer has been cultivating cotton since 20 years.

This household consists of Eeranna, Padmamma, who is his wife and their daughter Amrutha. While Eeranna and Padmamma are farmers and agricultural labourers, Amrutha is a 12th class student in a government college in the nearest town of Mallepalli and also helps her parents in their farm related activities. Though they cultivate in both Kharif and Rabbi seasons, their main source of income is still agricultural labour on other's fields.

The total cotton produce from the three pickings is 13 quintals which is quite less according to Eeranna. He has adopted for Bt cotton ten years ago. He says that there was no trace of worm in the initial 4-5 years in the cultivation, but now the pink bollworm infestation is rampant. The worm eats the seed from inside and it hampers the growth of the cotton. Costs of fertilizers, pesticides and labour are too high against the low yield and less price for the produce. The lack of water sources in this village is another reason why they cannot opt any other crop and are stuck with cotton. Castor used to be one of the main

crops earlier before cotton came. He says another major obstacle to cultivate anything else is the high presence of monkeys and that the government should take an initiative and leave them in the forests.

Though the mills where CCI procures are within 10 kms distance, Eeranna never sold his produce to CCI. There are very few, may be two or three farmers that sell to CCI but the rest of the village sells their produce to the input retailer who gives inputs on credit. Upon clearing the credit they either sell to the same retailer if he is still willing to buy or any other 'broker' who just like the creditor comes to the village with lorries and DCM to buy the produce. The farmers gauge the price and sell at the available best price but only in the town.

There are three input creditors in a nearby village called Mustipalli and most of the farmers from Sunikala village depend on Mallesh who buys inputs from Mallepalli and gives them on credit to these farmers. This year Eeranna has Rs. 70,000 of debt including credit which includes both credit on inputs and cash for the labour costs.

He says though he has been trusting only one input creditor, the creditor sometimes does not give the seeds he wishes. He would thrust anything that is in abundance and may not be of good quality.

Though he agrees that selling at CCI is the best option, debt obligation compels him to sell to the creditor. He says even the low quality and less quantity of output (this year the first stock was damp and dark due to rains hence sold at Rs. 3000 per quintal) makes it difficult and worthless to carry produce to CCI bearing the transportation and labour costs.

Commenting on AMC and commission agents he says that is the worse place to sell as the agents deduct 2kgs on every quintal and also reduce Rs. 20 for hamali charges on every weighment. He sold the produce in three rounds at Rs. 3000, Rs. 5000 and Rs. 4000 respectively which is way lesser than the MSP price. Eeranna incurred a loss of more than Rs. 50,000 on the sheer paid out cost, far from accounting for family labour or any other rent or interest.

Cost of Cotton Cultivation on 3.5 acre Plot (in Rs.)

Ploughing and Cultivator (Power drawn)	10,200
Seed cost	24,900
Labour costs for weeding	16,000
Hired bullock drawn plough and harrow for sowing and weeding along with a male labourer (had to sow twice)	20,000
Pesticide	11,700
Fertiliser	10,800
Picking charges	13,000
Monthly interest of 2% on credit (inputs and cash)	7,000
Total paid out cost	**113,600**
Receipts on selling 13 quintals of cotton	56,400
Returns (loss)	-57,200

Table 3.16

Cost of Cultivation (CoC), Yield and Margins/losses Experienced by Cotton Farmers

		Avg. CoC in Rs. per acre	Avg. produce in quintals/acre	% HHs gained profits	Avg. Margin/ profit per acre	%HHs incurred losses	Avg. Loss per acre
Operational holdings	Marginal	26688	8.54	87	15714	0	--
	Small	23690	7.37	71	12740	23	8751
	Semi-medium	22820	6.88	64	12186	9	10900
	Medium	24711	7.83	50	19432	37	6074
	Large	35000	7.63	50	20000	0	--
Districts	Adilabad	19227	7.81	50	13193	23	6200
	Gadwal	23270	7.15	57	15823	36	8848
	Nalgonda	26978	6.42	72	14158	16	8383
	Warangal - Rural	24962	8.20	77	13125	8	11000
Total		24054	7.42	66	13869	18	8186

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Eeranna's experience broadly captures the experience of small and marginal cotton farmers cultivating cotton under rainfed conditions. They do experience marginal profits with intermittent losses. Farmers often say "what else would we do if not farming". Cotton cultivation creates the possibility of credit and keeps the source and cycle of credit alive. Here credit for the substantial part comprises consumption loans (Desmond, 2016, also reveals this pattern). Capital-intensive crops like cotton expands both creditworthiness and thereby, social spending. Access to sources of irrigation offers possibility of paddy and other crop cultivation which are relatively more secure in yields and prices (Alary, 1999). Absence of which forces cultivators to opt for cotton, moving away from low-remunerative crops like jowar, 'coarse' grains, and other capital-mild commercial crops like castor.

We captured estimates of cost of production and profits and losses among the surveyed cotton farming households. Detailed responses have been difficult to gather and often farmers do not recall all items of expenditure. Usually the expenditure is under-reported on items of paid out cost, let alone accounting for family labour or any other imputed costs. The detailed recording of all items of expenditure, like in the case of Eeranna, yields better results. The survey results presented here are approximate total paid out expenditure which is generally undercounted. To make it easy for the respondents, we asked them total expenditure and produce for the total cotton cultivation and then calculated them per acre. Table 3.16 shows that farmers incurred an average expenditure of Rs. 24, 000 per acre of cotton cultivation this year. This varies across classes of farmers depending on whether the land is leased-in on rent, the extent of family labour relative to hired labour, the ability to buy sufficient amounts of inputs and on time, and whether inputs are bought on credit etc. It also varies depending on whether there is inter-cropping, as is a practice among some in Adilabad, or mono-cropping. A more detailed calculation of expenditure, like in the case of Eeranna, reveals about Rs.32,000 per acre on own land. On an average, the cotton yields were about 7.4 quintals per acre, which is higher compared to the regional and national averages

Phots 3.5 & 3.6: Women showing cotton crop damaged due to excessive rain

in the past years. We also asked the respondents the price at which they sold their produce and calculated returns for respective families. Broadly, this year majority of farmers experienced marginal returns on cotton production - about two-thirds of households reported profits (see Table 3.16). The average of the margins among these households is nearly Rs. 14,000 per acre. A significant number of households incurred losses - about one-fifth of the households reported losses of more than Rs. 8,500 per acre[10] on an average. Even representing the cost of cultivation at the lower range, the rate of margin in cotton cultivation was only about 60 per cent of the expenditure. An average farmer in the region experienced returns to cotton cultivation equal to about Rs. 40,000. Unlike in the regions like Punjab and Haryana where cotton is one of the two or three crops cultivated in a year, cotton is the only crop cultivated when it is cultivated under rainfed conditions, which is the most prevalent practice in this region. This means that farmers have much higher stakes in cotton farming in Telangana compared to better irrigated regions. Household incomes among the cotton producers in the region are, therefore, significantly dependent on the outcomes of cotton production.

However, given the meagre landholdings and meagre incomes from cotton or other farming, what are the diverse sources of income? More than four-fifth of the households (84 per cent) reported own account agriculture as the main source of income (see Table 3.17) and about 10 per cent drew their income from wage labour in agriculture. The latter constitute more than a quarter of households operating marginal holdings. It should be noted that income from agriculture does not mean income from cotton production alone; it includes returns from various other crops as well depending on other crops and their share in cultivated area (will be discussed later). Importantly, nearly 60 per cent of the cotton farming households had a second main source of income and 14 per cent reported a third major source of income[11]. Nearly half of the households which reported a second major source of income, drew it from casual labour in agriculture and non-agriculture. Equally important to note is that about one-third of the total cotton farming households drew a significant part of their incomes (one of

10. A few households could not report returns as the harvest was still awaited and in some cases the produce not sold yet.

11. In the survey we have asked the households to report three major sources of income in the descending order of their importance. The second and third sources of income are under-reported unless they were a 'major' source.

Table 3.17

Major Source of Income for Cotton Farming Households

HH categories based on Operational holdings	Own-account agriculture	Casual labour in agriculture	Self-employment in non-agriculture	Casual labour in non-agriculture	Regular wage/ salary in government sector	Regular wage/ salary in private sector	Pension	Total
Marginal	45.5	27.3	18.2	0.0	0.0	0.0	9.1	100
Small	80.6	13.9	0.0	0.0	2.8	2.8	0.0	100
Semi-medium	93.3	3.3	3.3	0.0	0.0	0.0	0.0	100
Medium	95.7	4.3	0.0	0.0	0.0	0.0	0.0	100
Large	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100
Total	84.3	9.8	2.9	0.0	1.0	1.0	1.0	100

Source: Primary household survey (Dec. 2019 & Jan. 2020)

the two major sources) from casual wage work on farms. Usually members of these households hired out for wage labour in activities related to other crops when there was some lean period on own-account cotton farms.

The story of cotton farming in Telangana has been quite dynamic, witnessed in the expansion of cotton in rainfed/semi-arid agroclimatic conditions and the adoption of new technologies. It has been a fertile ground for contestations and debates on the positives and perils of agro-technologies. If productivity growth and profits have been one side of the story, risks and losses have remained a major concern for the wellbeing and sustainability of cotton farmers on the other side. Farmers committing suicide, an extreme manifestation of the distress, had been reported from this region since the late 1990s. One of the connecting links and indicators of the losses, shocks and distress have been the feature of indebtedness among cotton farmers (see Parthasarathy and Shameem, 1998; Revathy, 1998; Vakulabharanam, 2004, Galeb, Revathy and Reddy, 2009; Desmond, 2016). Access to credit and sources of credit (as discussed above in section 3.2.1) are crucial in productive spending in cotton farming as well as its outcomes. Cotton farming, in turn, increases creditworthiness and keeps the cycle of credit alive, including for consumption and social spending. This cycle of credit is at high risk because of the volatile nature of cotton cultivation, and shocks and losses in outcomes result in the accumulation of debts. We have shown above that about two-third of cotton farmers experienced marginal gains in cotton production this year and about 60 per cent of households cleared their loans either partially or fully. Yet, households reported significant amounts of pending loans from both institutional and informal sources as shown in Table 3.18. Nearly 90 per cent of them had debts from either or both sources. About 70 per cent had outstanding loans with private money lenders and nearly 60 per cent from public banks, and about 40 per cent with both informal money lenders and institutional sources. On an average, these households had a debt of more than Rs. 100,000 from institutional sources and Rs. 200,000 from informal sources. Pending loans to the tune of Rs. 200,000 among the landless and marginal holding households and to the tune of Rs. 300,000 among the small holding households represent a substantial debt burden which can potentially push them into distress situation if they experience two consecutive losses. Excessive reliance on one

crop and lack of other major sources of income put high stakes in cotton production and threaten sustainability and wellbeing of cotton farmers.

3.4. Farmer Producer Organisations and Farmers Rights' Organisations

The government in the recent years has been emphasising on the need of promoting farmers collectives through the concept of Farmer Producer Organisations (FPOs). This move recognises the fact that agriculture is dominated by small and marginal farmers who are unorganised and lack bargaining power to realise good value for their produce in the supply chain ridden with numerous intermediaries.

FPOs like farmers cooperatives are legal entities formed by the primary producers. They are private companies registered under the Indian Company Act, however, are different in legal form in terms of membership, shares, profit sharing etc. from cooperatives which are registered under Cooperative Societies Act (see NABARD, 2015). It is the FPOs that are being actively promoted in the last few years by the government as a central sector scheme by the Department of Agriculture and Cooperation and Farmers Welfare (DACFW). National Bank for Agricultural and Rural Development (NABARD) provides financial and development support to the FPOs. The objective behind this initiative is to collectivise small and marginal farmers to ensure better incomes by building their production and marketing capabilities. FPOs are envisioned to be owned and governed by a collective of farmers to improve bargaining power and net incomes of the farmers. They create a network of all the required resources for the purpose of production and marketing.

As collective legal entities, FPOs can enter into contracts and benefit from the institutions that are willing to provide inputs, technology, technical information and financial support in bulk which may not be the case for small independent farmers

Table 3.18

Indebtedness (pending loans) of Cotton Producing Households from Institutional and Non-institutional Sources

		Source-wise no. of households with pending loans			Average pending loans with banks per HH (Rs)	Average pending loans with private lenders per HH (Rs)
		Institutional (Banks)	Non-institutional (informal lenders)	Both sources		
Own agricultural land	Landless	0	8	0	0000	195000
	Marginal	2	11	7	43000	146111
	Small	10	13	26	104944	238590
	Semi-medium	6	4	18	105800	188364
	Medium	3	2	4	201429	405000
	Large	1	0	0	600000	0000
District	Adilabad	9	4	13	138043	151706
	Gadwal	0	22	9	69000	333387
	Nalgonda	7	8	15	104455	191087
	Warangal-rural	6	4	18	113583	125455
	Total	22	38	55	113077	215796

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Photo 3.7:
Activists of a farmers union, All India Kisan Sabha, speaking to the cotton seed farmers in Gadwal

due to small scales of production. Farmers lose a large part of the value during marketing due to the non-transparent middlemen/intermediaries, but the collective of FPO establish direct link to the final buyer in the supply chain or negotiate better terms for their produce.

Currently, according to NABARD portal on FPOs, there are a total of 68 FPOs with 22,923 shareholders in Telangana. Most of these are in the formative stage and are engaged in various crops. Preliminary studies show that they are developing backward linkages with the institutions that provide inputs, technical and financial support to the FPOs and forward linkages are with the institutions involved with certification, processing and marketing of the produce (Manaswi, et al 2019; Manaswi, et al 2020). NABARD in association with Small Farmers' Agribusiness Consortium (SFAC; a society of the DACFW) and National Cooperative Development Corporation are involved in promoting FPOs. Locally, other non-governmental organisations such as Centre for Sustainable Agriculture, ADS, CROPS and other institutions are involved in promoting FPOs in the state through providing organic seeds, technical and other support. Fertilisers are procured from IFFCO. In the forward links, the FPOs are connected with certifying agencies (under Participatory Guarantee Schemes for organic certification), processors and buyers of the produce (Manaswi et al, 2019).

FPOs in Telangana are engaged in the production of pulses, rice, cotton and vegetables. Most of them are in their formative stage and very few are involved with cotton production. Respondents noted that NABARD and SFAC, as part of government policy, give licenses to FPO start-ups but many of them fizzle out due to lack of technical expertise and vision as soon these agencies withdraw the funding. They also noted that many of the FPOs are formed to seek profits rather than for a cause. According to a respondent, many of the FPOs only supply inputs at a subsidised cost by tying up with fertilizer and seed companies and some of them appropriate profits from the farmers.

Apart from streamlining the supply chain for conventional crops to enhance the benefits of economies of scale to the farmers, there are also FPOs and initiatives that focus on alternative production practices to create sustainable agriculture. Organic cotton is one such crop which not only creates

alternate supply chain for the farmers but bases its demand for the customer on the fact that its cultivation enhances the socio-ecological life of the farmers (Flachs and Panuganti, 2019). While only a few FPOs are active in cotton, it is those promoting organic cotton such as Chetna Organic Society that seem to be active. Other initiatives such as Better Cotton Initiative by Deshpande foundation reach out to cotton farmers in general who cultivate hybrid cotton to promote better cultivation practices such as integrated pest management etc. in their project areas.

Chetna Organic Society is a farmers' organisation with about 15,200 members according to one of its representatives. It is involved in organic cultivation supplies free seeds and inputs and arranges for the transportation of the produce. There are challenges in organic cotton production and returns: farmers do not realise much profit unless there is a good negotiation with the brands that purchase organic cotton; there is no separate pricing structure for organic cotton. Many brands that buy organic cotton negotiate tough with the mills and do not pay more than Rs. 500 or 1000 for a candy. As ginners also need certain profits, there is very little premium for the farmers. Notwithstanding these challenges, there is potential for expansion of organic cotton especially among ST farmers in Adilabad who have very less capacity for capital-intensive hybrid cotton. The productivity levels of Bt cotton experienced by this group is very low, and they could benefit from low-capital cotton cultivation practices. As Flachs and Panuganti (2019) stress, more than material gains for the farmers, organic initiatives can build a community of farmers equipped with bargaining power, knowledge of agencies along with building an alternate supply chain.

Irrespective of whether they are engaged in organic or GM cotton, FPOs per se have the potential to change the landscape of farmers' negotiating power through better access to information and input and output markets because of collectivization. It is yet to be seen how the government supports and expands the number of FPOs and their scope in securing the interests of farmers.

Farmers' organisations such as Telangana Rythu Sangham (state wing of All India Kisan Sabha affiliated to the Communist party of India (Marxist)), Telangana State Rythu Sangham (affiliated to the CPI) and farmers' wings of other political parties play an important role in raising farmers issues and mobilising farmers. These usually pertain to demands for higher MSP, public procurement of cotton at MSP, regulating cotton seed price and waiver of farm loans in view of losses in production etc. Even though the mobilizational strength of farmers' organizations in the state is meagre unlike in states like Punjab and Haryana, the issues they raise and articulate through small demonstrations and media do resonate with major political parties. Besides, researchers and civil society organisations and activists have also articulated issues of cotton farmers in the region and have drawn attention to their plight since the 1990s. All these groups have actively contributed to the debates on the pros and cons of GM seed technology and on their regulation. A remarkable contribution which saw significant positive impact was on the front of child labour in cotton seed production. Organisations such as MV Foundation and activist-researchers have relentlessly campaigned against the employment of child labour in cotton fields. Despite all such campaigns, there are gaps in several fronts including lack of cotton market yards and infrastructure in most parts of the state, access to remunerative price, regulation in input markets, access to institutional credit, agricultural extension and support.

Chapter 4

LABOUR DYNAMICS IN COTTON PRODUCTION

This chapter describes labour use in various activities of cotton production and forms of labour including dimensions of gender, child labour, migrant labour and attached labour. Though the primary focus of this study is not labour and work conditions, it offers a preliminary overview and suggests areas that need attention to address FRPW issues in cotton production.

Cotton cultivation is a labour-intensive activity. Cotton continues to engage higher human labour per unit area compared to other major crops like paddy. This seems to be an important dimension that influences regional patterns of growth/decline in cultivation of cotton depending on the supply and demand of labour. Telangana's emergence in cotton cultivation does suggest a link with its higher supply of labour in rural areas relative to better irrigated regions. In irrigated areas where the demand for labour is already high, the growth of cotton has either stagnated or declined (as discussed in chapter 2). Its cultivation under rainfed conditions finds fertile ground in arid and semi-arid regions like Gujarat, Rajasthan, Maharashtra and Telangana, which also coincide with higher labour supply. Within Telangana, the agriculturally backward districts where irrigation levels are low, like in Nalgonda and Mahabubnagar (old districts), have witnessed a higher pace of growth in area under cotton cultivation in most recent years. Districts like Gadwal that had only out-migrant labour are now witnessing in-migration as well from other states for wage work in cotton production, especially in production of cotton seed. Improvements in access to irrigation in this district also contributed to this shift in labour demand due to labour intensive irrigated crops. This district has emerged as an important location for production of seeds of various crops besides cotton seed.

Labour cost and the demand for labour is an often-repeated complaint by farmers, beside cost of pesticides and seeds and their ineffectiveness. The seasonality of demand for labour in agriculture compounds the issue – it not only increases labour cost, but inability to hire and engage labour at the right time affects the growth and yields of the crop negatively. Though what labourers receive as wages are not high, the labour cost turns out to be significant due to the overall squeeze on returns. Because farmers do not have any control on the high cost of other inputs such as seeds and pesticides, it is the labour cost that they usually dissent the most.

4.1 Household Labour and Cotton Farming

Before discussing the dynamics of labour in cotton production, we should recall the discussion in the previous two chapters on the prevailing agrarian structure which predominantly comprises small-scale cultivators. A significant number of them lease-in land and cultivate cotton, and some of them do not own any land. More than half of the households engage in casual wage work in agriculture. Casual wage work is one of the three main sources of income for about 30 per cent of the cotton farming households. This structure reduces the distance in economic-status between the class positions of hired labour and self-employed farmer, unlike, for example, a plantation worker and the estate owner. Some of the cotton cultivators themselves hire out on other farms. Also, most of them engage in manual work along with the hired labour.

Household or family labour constitutes a significant part of human labour engaged in cotton cultivation. However, even the marginal landholders have to hire labour for certain activities though the average scale or size of cotton farm is just over one hectare. The share of hired labour relative to household labour increases with the size of the farm. The most pertinent feature of the nature of cotton farming households in Telangana is the magnitude of household labour. As shown in

Table 4.1

Share of Cotton Farming Households which have Women Members Engaged in Own-Farm Work

		Continuously	Sometimes	In particular activities only	Rarely	Never	Total
Operational holdings	Marginal	86.7	0.0	6.7	6.7	0.0	100
	Small	88.9	1.9	1.9	1.9	5.6	100
	Semi-medium	91.4	0.0	5.7	2.9	0.0	100
	Medium	88.9	5.6	0.0	5.6	0.0	100
	Large	50.0	0.0	0.0	0.0	50.0	100
Districts	Adilabad	92.3	3.8	3.8	0.0	0.0	100
	Gadwal	85.7	0.0	2.9	5.7	5.7	100
	Nalgonda	81.3	3.1	6.3	3.1	6.3	100
	Warangal - Rural	96.8	0.0	0.0	3.2	0.0	100
Total		88.7	1.6	3.2	3.2	3.2	100

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Table 4.1, women members in nearly 90 per cent of cotton farming households continuously engage in manual farm activity. Except in one of the large-holding families, women in the remaining households also engage either in particular activities or occasionally. Similarly, but at slightly lower level, men in 80 per cent of the cotton farm households engage in farm work continuously, and except a few, the remaining ones engage in particular activities or some times.

Equally importantly, household labour outweighs hired labour among majority of the cotton farmers when assessed in overall person

Table 4.2

Share of Cotton Farming Households which have Male Members Engaged in Own-Farm Work

		Continuously	Sometimes	In particular activities only	Rarely	Never	Total
Operational holdings	Marginal	80.0	0.0	13.3	6.7	0.0	100
	Small	78.8	3.8	9.6	3.8	3.8	100
	Semi-medium	82.9	2.9	11.4	0.0	2.9	100
	Medium	89.5	5.3	0.0	5.3	0.0	100
	Large	0.0	50.0	0.0	0.0	50.0	100
Districts	Adilabad	92.3	0.0	0.0	3.8	3.8	100
	Gadwal	72.2	0.0	22.2	2.8	2.8	100
	Nalgonda	70.0	10.0	6.7	6.7	6.7	100
	Warangal - Rural	90.3	6.5	3.2	0.0	0.0	100
Total		80.5	4.1	8.9	3.3	3.3	100

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Table 4.3

Percentage of Cotton Farming Households by the Share of Family/household Labour in Overall Labour (family+hired labour) Engaged in their Cotton Farms

		More than 75%	50%-75%	50%	25%-50%	Less than 25	Nil
Operational holdings	Marginal	6.7	13.3	20.0	53.3	6.7	0.0
	Small	24.1	22.2	11.1	25.9	13.0	3.7
	Semi-medium	25.0	11.1	33.3	19.4	8.3	2.8
	Medium	26.1	8.7	4.3	39.1	21.7	0.0
	Large	0.0	0.0	0.0	0.0	50.0	50.0
Districts	Adilabad	40.6	9.4	12.5	25.0	12.5	0.0
	Gadwal	20.0	5.7	14.3	40.0	14.3	5.7
	Nalgonda	6.3	21.9	28.1	21.9	15.6	6.3
	Warangal - Rural	22.6	25.8	12.9	29.0	9.7	0.0
Total		22.3	15.4	16.9	29.2	13.1	3.1

Source: Primary household survey (Dec. 2019 & Jan. 2020)

days engaged in their respective farms. Table 4.3 shows that family labour comprises at least 50 per cent or more of the total labour engaged in cotton farms among more than half of the households. Members in about 30 per cent of the households contribute between 25 to 50 per cent of the total farm work. In fact, our qualitative observations suggest that family members work very long hours, from morning till the evening. Further, members in more than half of the households hire out to work on others' farms; their share is much higher among the marginal and small households (see Table 4.4). Another feature prevalent is exchange of labour, especially of women, which even households operating larger holdings also engage in. Women in more than half of the households engage in exchange of labour. These attributes are significant indicators

Table 4.4

Share of Cotton Farming Households that Hire-Out for Farm Work and Exchange Labour with Others

		Hire-out to work on others' farms		Exchange labour with others	
		Yes	No	Yes	No
Operational holdings	Marginal	86.7	13.3	73.3	26.7
	Small	61.8	38.2	54.5	45.5
	Semi-medium	41.7	58.3	54.3	45.7
	Medium	39.1	60.9	45.5	54.5
	Large	0.0	100.0	50.0	50.0
Districts	Adilabad	40.6	59.4	58.1	41.9
	Gadwal	63.9	36.1	50.0	50.0
	Nalgonda	59.4	40.6	45.2	54.8
	Warangal - Rural	51.6	48.4	67.7	32.3
Total		54.2	45.8	55.0	45.0

Source: Primary household survey (Dec. 2019 & Jan. 2020)

Photos 4.1 & 4.2: Women commute to nearby villages to work in cotton fields and other crops

of the nature of most of the cotton producers in the region, which is marked by self-exploitation of household labour.

Family labour is the most important factor in cotton seed cultivation. Cotton seed is cultivated on small plots of land, mostly between one or two acres of land because it is an extremely labour-intensive activity compared to normal cotton. Most of the families try to minimise the labour costs by employing family labour, almost everyone in the household work on the fields, including children during cross-pollination. This is quite apparent in the marginal and small farmer households. Farmers with larger holdings, who cannot engage household labour continuously, refrain from cultivating cotton seed in view of labour costs and shortage of labour during peak seasons. An organiser himself cultivated mangoes and other fruits. When asked why he does not cultivate cotton seed, he said, his family members do not engage in farm work. It is not possible to cultivate cotton seed unless one's own family members engage in the labour activities. In other words, cotton seed cultivation is difficult and unremunerative if it is largely based on hired labour. Given the returns, its reproduction is based on long hours of intensive household labour almost on every-day basis.

4.2 Gender and Labour in Cotton Production

Major activities in cotton farming are ploughing and preparation of land, sowing and applying fertilizers, weeding, spraying pesticides, and picking cotton. Post picking, transportation, loading and unloading are other important activities where human labour is involved. Additionally, cross pollination is a major activity in cotton seed cultivation. Most of these activities are gendered in nature, in the sense that either only men or women are engaged in particular activities. There are, however, exceptions to a certain extent in activities in which migrant labour is involved.

Tilling/ploughing with tractors or oxen, weeding through the traditional bullock-drawn blade harrow and spraying pesticides are exclusively male activities. However, not all men engaged in cotton cultivation perform these activities. They may hire male labour for these activities. Supervision and market transactions such as buying inputs and selling the produce are also the domain of men. Women do complain that men often visit towns in the guise of visiting markets and not engaging in farm activities. Most of the activities are feminised. Cotton cultivation like many other crops is female labour-intensive –

sowing, application of fertilizers, manual weeding, and cotton picking are done by women. Women also take part in pesticide spraying, but the exact activities are gender specific: men carry the sprayer machine and also spray the pesticide, while women fetch water and mix them with the pesticides and put the mixture in spraying cans. Manual cross pollination activity in cotton seed cultivation is also a female labour activity. Children were engaged and, rather preferred, in cross-pollination to reduce labour cost (Davuluri, 1998; 2015). Incidence of child labour seems to have largely declined among hired labour, though it manifests to a significant extent in the form of household labour (unpaid family labour), as discussed below.

The gender-specific tasks remain intact irrespective of whether it is the household labour or hired labour. However, we did observe some exceptions to these broad rules. Men were engaged in cross-pollination activity as well as in picking of cotton, both among household and hired labour. This practice was more prominent among the migrant labour. The activities such as weeding and picking cotton keep women engaged almost throughout the crop cycle, whereas activities deemed masculine like pesticide spraying are not continuous. In fact, high intensity of family labour in cotton cultivation makes women's labour contribution among the cotton farmers disproportionately higher. They also have to keep good relationship with hired female labourers and other women with whom they engage in labour exchange. They toil extremely hard in order to reduce the labour costs.

4.3 Hired Labour and Wages

Across districts for activities like ploughing, weeding, pesticide spraying, labour from the village and nearby villages are hired, beside household labour. Ploughing is mostly done by hiring tractor to make the land ready for sowing. During sowing farmers use traditional bullock drawn tiller to make the soil loose. If they do not own bullocks, farmers hire a pair of bullocks along with the tiller and the operating labourer. During sowing, usually the male member handles the plough and the female members including hired labour are employed in sowing the seed. The cost for hiring a set of bullocks, plough and a labourer varied between districts, ranging from Rs. 600 in Adilabad to Rs. 1200 in Nalgonda.

Women labour is used for sowing, weeding and applying fertilizers and most of the women labour come from the same village or neighbouring villages in both districts. Women's wage for sowing and weeding in Adilabad ranged between Rs. 150-200 in Utnoor and Thalamadugu mandals and Rs. 200-300 in Boath mandal. Similarly, daily wage for women for these activities in Warangal villages ranged between Rs. 200-300. It was Rs. 200 to Rs. 250 in Nalgonda and Gadwal for sowing and Rs. 250- 300 for weeding as the labour demand increases from the time of sowing to weeding. Women's daily wages for sowing and weeding in all the districts seem to be either close to or marginally lower than minimum wages (see Table 4.5).

Cotton picking is the main labour intensive and expensive activity in the cotton production. Different practices are followed in different districts. In Adilabad piece rate (Rs.5 to 6 per kilo of cotton) is paid for picking cotton in all the three mandals (Utnoor has lower range, Thalamadugua and Boath mandals on the higher side). Women work extra hours on piece rate and pick on an average 50 kilos of cotton per day. Thus, they would earn Rs. 250-300 per day in these mandals, which is close to the minimum wage (see table 4.5) but only through extra hours on piece rate. In Warangal daily wage is offered for cotton picking. Cotton picking is done by both male and female

Photos 4.3 to 4.5: Workers engaged in picking of cotton. Mostly women engage in this work; men also do among the migrant labourers

labour coming from Maharashtra in Adilabad. In Warangal only women labour is engaged in picking cotton and all the labour come from the same village or neighbouring villages. Here women are paid between Rs.200-250 daily wage for picking cotton, which is lower than the minimum wage (see Table 4.5). In Nalgonda, the picking activity is mostly done by hired female labour from within villages and also from surrounding villages during the peak seasons when the labour is in short-supply in the village. The women when hired from other villages are usually hired through a woman labourer cum intermediary called 'mestri' who mobilises a group of women for work. She is paid a commission for mediating, beside the wage she earns from picking. The women are ferried in auto-rickshaws and this travel fare is borne by the farmer hiring these labourers. Wage payment is based on piece rate – Rs. 10 per kilogram of cotton picked in Nalgonda. On an average, woman would pick around 25-30 kilos in this area, unlike in Adilabad, due to lower yields. This piece rate

Table 4.5

Select Activity-wise Agricultural Minimum Wages (in Rs.) from 01.04.2019 to 30.09.2019

		Total		
	Category	Zone-I	Zone-II	Zone-III
I	Adult Farm Servants for attached workers (Per Annum)	91751.45	91751.45	91751.45
II	Casual Labourers			
1	Ploughing	319.90	273.25	257.25
2	Sowing / Weeding	308.90	303.90	257.25
3	Sprayer of Pesticides	423.20	371.55	330.90
4	Cotton Plucking / Cross pollination operation	403.55	371.55	330.90

Source: Dept of Labour, Govt. of Telangana (https://labour.telangana.gov.in/minimumWages.do)

was more or less constant for most of the season. However, labourers do not accept piece rate doing the third or fourth picking when the density of cotton available to pick is less, in which case they prefer a fixed daily wage.

In the month of January when the cotton production is in its last stage and in its third picking, one farmer, Madhavi, in Sukishala village hired a group of 15 women for a piece rate of Rs. 12 per kilogram of cotton picked on her 4 acre plot of land. In the final picking farmers usually hire-out for a daily wage of Rs. 250, but she wanted the work to be done in a single day so the labourers were hired at a higher piece rate basis. The all-female labour had come from the neighbouring village Mallepalli. The work was from 9:30 am to 5:30 pm. On that particular day the entire cotton that was left after the first two pickings was picked. In the initial two pickings, the piece rate was Rs.10 per kilo, but since the cotton is less during the third picking the piece rate is at Rs. 12 per kilo. The mestri of the group was to be paid Rs. 200 more. At the end of the day the produce picked by each member in the group is weighed by the farmer. A total of 3.58 quintals of cotton was picked, and on an average each member of the group picked 25.8 kilos of cotton and earned around Rs. 309. The money was not paid to them on that evening; they would be paid within 4-5 days once the produce is sold.

In Gadwal, cotton picking in case of normal fibre cotton was on piece rate, but the picking of seed cotton was done on daily wage basis as the latter was supposed to be carefully picked. Usually weeding is also done on a daily wage basis. Farmers do not prefer piece rate because they believe that labourers hastily complete the piece of land without properly removing the weeds. This is one of the reasons that most of the household labour is spent on weeding activity.

A remarkable feature of growth in labour-intensive cotton in these districts is increasing levels of commuting of female labour beyond their villages, within a radius of 20-25 kilometres. This is facilitated by private auto-rickshaws and road connectivity amidst increasing demand for farm labour. Because of high levels of mobility of labourers between villages, the wages tend to become equal across villages. For example, despite differences in irrigation, soil quality and yields, the wages were same in all the three villages surveyed in Nalgonda. This scenario pushes labour cost relatively higher in proportion for low yield rainfed crops including rainfed cotton.

Photos 4.6 & 4.7: Women workers, own-account and/or hired, engage in most of activities such as weeding, cross-pollination and picking of cotton. Hired labourers are paid piece rate in some areas based on the weight of cotton picked (photo 4.7)

Incidence of forms of labour in which an advance payment to the labourers is involved is also observed. It occurred in two forms, one, in the form of traditional yearly 'attached labour' and another on a monthly basis. The latter is prevalent in the recruitment of migrant labour for cross pollination activity (discussed under migrant labour section).

Yearly attached labour system is prevalent, but not in a prominent way, in the districts of Adilabad and Warangal. A few farmers employ male labourers, usually a single male member per household, under these terms. The annual wage in Kuchalapur, Adilabad was Rs. 80,000 to 90,000. In Oorugonda (Warangal-Rural) the annual wage was Rs. 120,000. Here men are also employed on a monthly wage paid in advance, as in the case of Laxman from Boath mandal who is paid Rs. 9500 monthly wage. He worked an attached labour for seven years between 2000 and 2007. He then migrated to the Gulf for work and returned. He cultivated cotton for a couple of years before he re-joined agricultural wage work.

4.3.1 Child Labour

The activities of emasculation and crossing require intensive and meticulous labour. Since the start of the cotton seed cultivation in Gadwal, children were preferred as cheap labour and also for their nimble fingers to remove the flower buds and for crossing. This pattern was started by the farmers from Andhra but it continued when the locals also adopted this work. When the landed farmers cultivated, they hired children of landless labourers. Child labour in cotton seed farming was well documented in the region especially during the 1990s (Venkateshwarlu, 1998; 2015). We came across many cotton seed farmers in their 30s who were illiterate and had been child labour in others' cotton seed fields. One farmer who leased in an acre of land for cotton seed cultivation said, "I have been working since I was 12. I did not go to school. My parents sent me to Kapus' farms for crossing and emasculation work. In summer when there was no agricultural work, I went to do masonry related work in construction. My father was a seasonal migrant always, he went


4.8


4.9

Photos 4.8 & 4.9: Women workers engaged in cross-pollination activity in cotton seed cultivation. Manual pollination is labour intensive activity involving tagging and emasculation of flower pistils in the cross-pollination process

for brick kiln related work in Hyderabad, Raichur and Kolapur. He took me along with him later on. They gave Rs. 7 for every 1000 bricks we made. This was 20 years ago."

There were many women and men farmers in their middle ages who knew the work of emasculation and crossing because they worked in their own fields when they were children.

Relatively less cultivation of cotton seed in Itikyala was attributed to lack of labour in that mandal and the lack of labour was in turn attributed to high literacy levels compared to the other districts. One farmer said, "There is more literacy here than in Maldalkal or Gattu regions (where the cotton seed cultivation is predominant). Children in those areas don't go to school, they are sent to work on fields for crossing and emasculation. Those regions were comparatively poorer than our region, there is lot of difference between us and them."

And also, some caste groups are more literate than other caste groups. A farmer in Marlabeedu from Munnuru Kapu caste group who studied till 10th said, "there is literacy to some extent in the Munnuru Kapu community which is the dominant caste in the village. The other caste groups such as SCs and other OBCs are quite illiterate and didn't improve with the current generation."

Poor households with less land holdings tend to maximise the family labour so as to reduce the labour costs. For marginal farmers hiring labour is a high investment for the little land they cultivate when they can employ the entire family and work it themselves.

In the recent years, the children of the cotton seed farmers are enrolled in school but every year there is a drop in attendance in schools in these villages during the period of emasculation and crossing. School going children stop going to school for two months and work in the fields. Two school teachers from Dharur Mandal said that a minimum of 40-50 per cent of students do not attend school during those couple of months when those two activities happen.

In one of the villages we met young girls in the age group of 15-18; these girls were either illiterate or drop outs from school. Most of the girls in this group were from Kuruva caste (OBC caste community) and were mostly from households of marginal farmers. On one of the field visits, early in the morning, a group of ten girls were going to a nearby village to work on chilly fields for a wage of Rs.260 per day. Cotton seed cultivation was completed by then, so these girls were now working on others' fields under different crops. One of the girls who is 16 years old, dropped out of school in 2nd class. She could not continue as she had to take care of her younger siblings while her parents went to fields. Now those two siblings go to school but skip it during the emasculation and crossing period. Minor marriages among girls are also common in these villages, one girl from this group said that their group was bigger but some of her friends in the same age group got married in the past three years.

Loading and Unloading

Hamalis are loaders and un-loaders of various products/produce at different market points working for the producers, buyers and the middlemen. We found hamalis at three different points in the supply chain- working with input retailers, commission agents and with the mill traders. They usually comprise groups of 6-12 from a particular village or a state, put together by 'mestris' or 'thekedars' based on local contacts.

Inputs retailers went door to door along with vehicles and hamalis to buy cotton from their customers who were indebted to them. As observed in the field, the group was paid Rs. 70 by the retailer for each quintal of cotton they load on the vehicle; hamalis also take cotton as payment in kind from the farmers. On the day of the interview they earned Rs. 4340 for loading 62 quintals of cotton and 50 kilos of cotton amounting to Rs. 2500. Their total earnings were Rs. 6,840 and each person got Rs. 570. Some of the hamalis who worked with input retailer also owned lands and cultivate cotton in their village. Apart from this work, they also went for loading and unloading of other crops, for example Mosambi, in other seasons.

In market yards: Each commission agent in the market has a group of hamalis working for him. As the agents are active in the mediation between farmer and the buyer for various other crops, the hamalis here deal not only with the cotton crop but other crops as well. The agent we interviewed had a group of 6 people and the group was paid Rs.60 for the quintal of cotton they unload and load. This price is borne by the farmer. They are also involved in other informal work in the off season. They have a union and the union leader said that if anyone wanted to join the yard as labour there is a custom to pay a certain amount to the union before they join. He remarked that there is a shortage of work and labourers have to actively seek out work.

In Ginning Mills: All the labourers in the ginning mills were migrants except the watchmen who came from nearby villages. The labourers in these mills were from Assam, Bihar and Maharashtra. These labourers were an example of footloose labour who migrated from one place to another in search of work. They worked as construction workers in cities like Pune and Hyderabad. Cotton mills were such an option open to them in this particular season. There were both male and female labourers among these migrants. Men were more in numbers and worked as loaders, the women worked as sweepers. They stay as long the procuring continues and leave once the procuring and ginning stops.

The mills hire the labourers through contractors locally called 'thekedar' who mobilise the labourers from their home state. In all the


4.10


4.11


4.12


4.13

Photos 4.10 to 4.13: Male workers engaged for loading and unloading of cotton at market yards, ginning mills and farm gates. Women are engaged in clearing and assisting men at these sites.

mills there are labourers from more than one state. Labourers from each state form a separate group and their work is monitored by the contractor who brought them. In one of the mills, there were two groups, one of Maharashtra and another of Assam. Hamalis in the mills are paid Rs. 10 per group for every quintal of cotton they unload from the vehicles. The labourers estimated that they earn an amount of Rs.300-400 per day. As the payment is done on piece rate basis, the amount earned depends on the quintals of cotton they unload. The two groups in the mills compete to get hold of the arrivals of cotton in the mill. Sometimes CCI stops procuring for more than a week till the cotton that is stocked up is entirely ginned to make space for new arrivals. Such a long waiting is a huge loss to them. There is also a sense of lack of sufficient work in the mills as there are many labourers and given that it is a piece rate work, one can only earn so much with a limited stock of cotton coming into the mill per day.

Non-locals are preferred as they were cheaper and the communication gap between the traders and the locals is favoured by the traders as it blocks the capacity of those labourers to bargain. While the inputs' creditors pay Rs. 80 per quintal of cotton loaded/unloaded to hamalis who are available from the nearby villages, the hamalis in the mill were paid only Rs.10 per quintal. One can assume that the work is more or less a stable job for 6 months, but the hamalis' testimonies from the mill tell a different story. Sometimes they did not have work for days and the presence of many labourers made it impossible for them to

take advantage of the piece rate wage by working extra hours as there was no work after a point.

Labour in Cotton seed ginning mills: Almost all the workers in the cotton seed ginning mills are farmers and agricultural labour who come to work in the mills after the cotton seed cultivation. There were 40 people working in a mill, both men and women and the work was segregated between them. While the women put the cotton in machines, men carried the cotton to the ginning machines. Men and women were paid Rs. 300 per day. This work lasted for two months.

4.3.2 Migrant Labour in Farming

There is a moderate incidence of migration for agricultural work in Telangana. Migrant labourers are found working in the cotton farms of two of the districts studied. These labourers were hired for only certain activities in the cultivation that were labour intensive in nature.

In Adilabad, farmers in the non-tribal areas employ labour from Maharashtra. Labour from Nanded and Yavatmal districts of Maharashtra come to Adilabad to work in cotton farms. They come specifically to pick cotton. Of the three mandals that were visited for the field study, two mandals prominently use labour from Maharashtra. The Utnoor mandal which has big tribal population do not employ labour from outside the region. The migrants that come in groups from Maharashtra for cotton picking constitute both male and female labour. Whereas in Warangal, Nalgonda and Gadwal, only women labour is engaged in picking cotton and all the labour come from the same village or neighbouring villages.

During our conversation with one of the group in Boath Mandal, they said they come for cotton picking work after *Deepavali* and stay in Adilabad till January. And after January they go to Metpally in Jagtial district in Telangana to work in Turmeric fields (harvesting). They have been coming to same village for last six years. This year a farmer has sent autorikshaw (vehicle) to bring them to Boath and provided a place (shed) to stay. These migrants are said to be *Adivasis* (ST) from Nanded district. The farmers pay Rs. 6 per kg of cotton picked. They earn between Rs. 200 to Rs. 350 depending on the cotton they pick for the day. They go to farm early in the morning and work till sunset. Every day in the evening the farmer weighs the amount of cotton that is picked by each member of the group and tell the day's waged earned. The group we interacted with had 15 members, out of which 8 were women and 7 were men. Most say they do not own any land. Two members of the group said they own land. One person has two acres and the other 1.5 acres of land. They say there is not much work in Nanded after the Kharif season. They mostly grow Jowar in their place. Their place experiences either drought or receives more rain that is not good for *jowar* crop and one cannot expect to earn on agriculture or agricultural wage work. They say they earn more money picking cotton compared to their own agriculture at their native village. In Utnoor mandal labour that is employed is from the same village and the neighbouring villages for picking cotton and they are paid Rs. 5 per kg.

In Gadwal, labourers are hired in a group of 15-20 from the regions of Rayalaseema in Andhra Pradesh and some regions of Karnataka which border the district of Gadwal. These labourers are hired for over a period of one to two months for emasculation and crossing. As most of the families in the villages cultivate cotton seed and prioritise working their own lands first, there is a shortage of labour for those who cultivate larger plots and family labour alone is insufficient. As this work requires a particular skill, labour who are adept at it are hired from these regions. These regions

have a background of cotton seed cultivation and a pattern of recruitment of migrant workers has emerged for this work. They are hired through a 'mestri' (head of the group/contractor). The contractor is given a commission for bringing in a group of labourers and in some cases these contractors work along with other labourers. Workers are paid between Rs.12,000-13,000 per month and are provided with shelter and food. These migrants consist of both male and female, including married couples, engaged in cross-pollination activity. They come for a period of a month or two and leave after the work.

4.4 Technology and Labour Use

Weeding has been an important activity dependent on human labour in cotton cultivation. Different types of herbicides, some meant to treat the soil and some after the growth of the plant, are introduced in the market in order to stem weeds and reduce labour use/cost. Herbicide tolerant (HT) cotton seed is not officially permitted in India (Stone, 2016, also reports the attempts at introduction of herbicides). However, such seeds seem to have made their way into markets unofficially. Farmers reported use of herbicides, especially in Adilabad and Warangal. When asked an input retailer in Adilabad town how is it possible to use herbicides without HT seeds, he said that there is suspicion that HT is available in this region. It is happening through some companies though they do not have permission. Weeding alone costs Rs. 4000-6000 per acre for farmers whereas herbicide costs Rs.800 per acre. Therefore, a farmer saves money by using herbicide through which farmers reduce weeding activity which is labour intensive. Major brand in herbicide is Hitweed right now. Bayr, Cingenda and Vrillod are among other popular brands of herbicides for various crops. Glyphosate is a herbicide for cotton crop. Glyphosate was available in a few brands including Godrej and also Roundup which is manufactured by Bayer company. Both these are banned in India and there were reports that government agencies in these districts have warned retailers against selling these products illegally.

In our survey, about 45 per cent farmers reported the use of herbicides this year and many of them have been using since more than five years. Asked if the herbicide use has reduced labour requirement in weeding, about two-third of them said it reduced about half of the labour need. However, there was not enough clarity on the herbicide use. Most of them seem to use only those which are meant to be applied to the soil, which curtails weeds in the immediate phase after sowing. Farmers and input retailers mentioned about Bt-3 which is resistant to glyphosate. As Bt-3 is banned in view of the environmental harm, it is unclear whether and what kind of herbicides are used, which needs a focussed study on the issue[1]. With no regulation and checks on the illegal supply of HT cotton seed, it is reportedly sold at higher prices to farmers (Donthi, 2020).

Similarly, a new hybrid is being introduced to reduce labour use in cross-pollination activity. Sterile is a new hybrid of parent seeds that do not require emasculation of the flower buds and tagging, the crossing can be done directly. The type where emasculation is necessary is called Conversion. The Sterile was introduced by certain companies last year. As informed by an organiser, some companies have 90 per cent of the parent seeds sterile, and some have half sterile and half conversion and few companies have not yet introduced sterile yet. But he says that next year it will be a total shift to sterile as

1. Sarampally Mallaredddy, Vice President, All India Kisan Sabha (a major farmers' organization in India) while sharing his insights on cotton production and farmers issues in Telangana for the current research alleged that glyphosate resistant Bt-3 cotton is cultivated in 18 lakh acres in India though there is a ban imposed by the government on the release of Bt-3.

it removes the labour costs that are invested in emasculation. The cost for a kilogram of seed from sterile parent seed is Rs. 370 whereas that that from Conversion varies between Rs. 410 to 440 per kilo. The difference as he says is because the yield of the prior is more and remains stable across all the companies so all the companies have a fixed price; the prices are adjusted to meet the supply and demand (in stores for these seeds) balance. Conversion parent seeds vary in yields so they have different prices for different companies.

Unlike for the conversion type that requires the crossing to be done by 1:30 -2PM, for sterile seeds the crossing can be done till 3 PM. If the crossing is forgotten on some flowers, the flowers wilt off in 3 days' time. It is a development in technology that reduces labour costs and keeps the cultivation error free.

4.5 Safety and Health

There may be long term health concerns related to use of pesticides in cotton cultivation, beside environmental concerns. However, we only asked farmers if they experienced any health issues and difficulties while working in cotton fields. Members in nearly 40 per cent households have experienced some form of uneasiness or health issue especially while dealing with pesticides. Some mentioned irritation in eyes, nausea and vomiting, some experienced breathing issues. With regard to precautions, we asked if they use any protective gear while dealing with pesticides and working in cotton field. About 20 per cent said they do not use any protection. However, most of those who said yes, merely covered their face with a cloth and nothing more.

Despite risks of failure of cotton crop and possible losses due to uncertain climatic conditions and pest infestations, only 20 per cent of cotton farmers insured their crop. Of the remaining, 30 per cent were not aware of cop insurance[2]. These are the areas that need attention and awareness campaigns and government interventions can bring improvement in protecting farmers against health and financial risks.

2. Malla Reddy says that insurance is covered for a small proportion of farmers who avail crop loans. However, "until now, no compensation was given to farmers who have suffered losses due to natural calamities".

Chapter 5

UNPACKING THE COTTON SUPPLY CHAIN

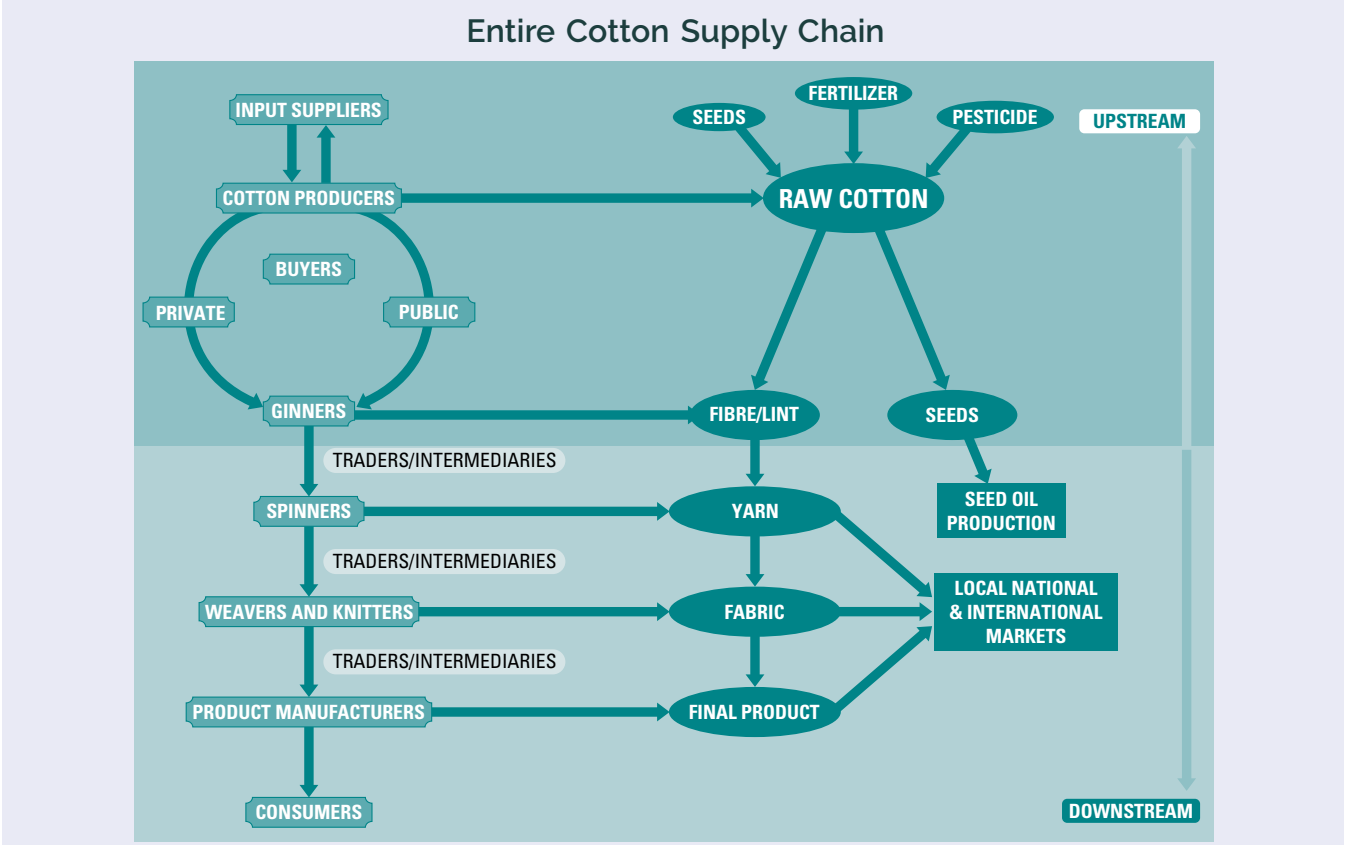
This chapter analyses the cotton supply chain with a focus on market transactions of cotton farmers with various actors in the input and output markets. It mainly focuses on the first transaction in the output market, that is, how the cotton produce is sold by the farmers, to whom and on what terms, and how the price is realised. It extends its scope to the extent farmers are involved in various market exchanges, including input and credit markets that influence the terms and modes of selling/exchange of the cotton produce. Chapter 3 has already discussed inputs and credit in the process of farming; here, we discuss the role of the players in input and credit markets beyond these markets, especially their linkages in the output markets. This chapter finally connects all the nodes in the supply chain of cotton, highlights the key actors and their position in the network, their roles and inter-linkages.

The journey of cotton from the cultivation of cotton in the farm to the eventual sale of kapas (raw cotton comprising seed and fibre) in the market constitutes a complex and non-linear production and supply chain. The chain is choreographed by a wide range of actors that partake in input supply, farming, output exchange and trading, and transportation. Transactions in cotton produce markets occur within and outside the purview of formal/regulatory mechanisms, within and outside the stipulated physical marketplace (market yards and other notified spaces) – through informal channels and informal actors. Both state and non-state/private actors procure commercial cotton but their relative importance and presence vary seasonally/annually depending on the prevailing market price of cotton. This market price is determined by the domestic and the international demand of cotton yarn, fabric as well as final products. Consequently, it is exposed to high volatility in global cotton commodity markets and price fluctuations that differentially impact the earnings of the diverse groups of players. The gains or returns are unevenly distributed between these actors who are integrated in the trans-sectoral and trans-national supply chain of cotton.

Mapping the entire movement of cotton in its different forms reveals that its supply chain is configured along a series of processes and stages through which cotton commodities reach global and national end-users through myriad channels of distribution. The organization of this network, its full range of operations and their coordination are shaped by non-chain actors like the state, non-governmental organizations and diverse civil society associations. The state through its various interventions to provide support and subsidies to the producers and regulatory framework is a key player in conditioning the market structure and exchange in cotton. Tracing the operations from cotton cultivation to the final garment production and distribution demonstrates the involvement of cotton farmers and labourers, traders at various scales, ginners, spinners, weavers and/or knitters, cloth manufacturers and exporters.

This report does not engage with this extended supply chain and the complete life-cycle of cotton till textile and garment industry as shown in Figure 5.1. The scope of the study is limited to the first segment of the supply chain with a focus on the cotton growing communities and their exchanges in the process of cotton production till their transaction in the output market. In other words, it focuses on the initial section of the supply chain that embody the processes of input procurement, production and marketing of commercial cotton and the constellation of actors incorporated therein. It also includes the production of cotton seed, one of the crucial inputs in cotton farming, which again involves farmers, labourers and input and produce traders along with seed companies and seed organisers. The flow of material, finance and information through

Figure 5.1



the backward and forward linkages between these actors placed at multiple nodes in this segment of the supply chain are analysed in this chapter. Figure 5.1 shows the entire supply chain of cotton and using a shaded box, highlights the segment, actors and linkages which would be the focus of this study. It foregrounds the conditions of cotton cultivation and farmer- producers located at the upstream of the supply chain.

The cotton cultivators are central to the very act and activity of cotton production and its eventual supply for local, national and global consumption. In order to understand the various mechanisms and actors in the initial segment of the cotton supply chain that directly link to the cotton farmers, an appropriate point of entry is the first transaction or exchange in the produce market. Our field study reveals that exploring how, where and to whom farmers sell cotton will unpack the cotton supply chain and open up unanticipated and non-linear linkages between these different categories of actors. The nature and characteristics of cotton producers, and their agricultural practices have been discussed in chapter 3 and the labour processes and conditions in the labour-intensive activity of cotton cultivation are described in chapter 4. Here, we begin the discussion with our findings from the field (derived from quantitative and qualitative methods of data collection) on who the farmers sold their produce to, who are the various actors involved in the process and what are the mechanisms that explain different modes of selling.

Going by the Agricultural Produce Market Committee (APMC) market regulations, the

5.1


5.2


5.3


5.4


5.5

Photos 5.1 to 5.5: Different modes of transportation of cotton produce for selling at market yards/ procurement centres and ginning mills

licensed traders should buy cotton at the market yards or notified areas with the oversight of market committees and officials and stipulated mechanisms (discussed further in sections 5.4 and 5.5). The Cotton Corporation of India (CCI) would also procure cotton for trade, as well as to ensure minimum support price (MSP) when the market prices fall below the minimum price. So, given these regulations and instructional support, it is expected that farmers would sell their produce to licensed private traders under the supervision of APMCs or to the CCI. As the market prices in agricultural year 2019-20 were way below the MSP in Telangana, we expected that most of the produce would be sold to the CCI if not to the private traders at the regulated markets. However, only a quarter of the households sold their produce to CCI, and only about one-fifth of the remaining ones sold to the licensed traders at the market yards. In other words, more than half of the farmers sold their cotton produce outside the regulated markets. Understanding these patterns of exchange of the produce will unravel the dynamics not only of the output market but the cotton supply chain around farming and farmers. In what follows we systematically analyse various dimensions of this supply chain.

After this introduction, the following section deliberates on the processes and sources through which the cotton cultivators procure inputs and credit and underscores the nexus of output and input markets. In section 2, the diverse intermediaries who are involved in taking the produce to the output market from the cotton producers are discussed. Section 3 focusses on the dynamics of the cotton commodity markets and section 4 elaborates the role of the CCI in this regard. The fifth section illuminates the structure and functioning of the market, looking into market yards and the auctioning process therein. Section 6 takes up the subject of cotton seed production and shows interconnections between the players of seed and kapas production. In the seventh section, the supply chain of cotton (marked in Figure 5.1) is elaborated through an illustration to identify the key players and their position in the network, their roles and inter-linkages. In sections 8 and 9, the choices available to the farmers and their concerns and challenges are outlined to better understand their production and marketing options and decisions. The chapter concludes by summarising the main findings.

5.1 Credit, Input and Produce Transactions: Inter-linked Markets in Cotton

The narrative of commercial cotton starts from the input procurement by the farmers and cultivators from different retailers of raw material necessary for cotton production. These groups of retailers perform various tasks and supply one or more inputs (seeds, fertiliser and pesticides) and act as one of the primary sources of credit to the cotton growing communities. It is difficult for the farmers to mobilise the finances for each crop cycle through formal credit institutions. As discussed in chapter 3, the increasing cost of cultivation, high risk in production and marketing necessitate informal borrowing for many cash strapped cotton growers. Often the inputs are secured on credit in addition to extra loans for meeting labour costs, consumption requirements and funding social occasions (like marriages, festivals etc.) and meeting other social obligations.

It was observed that the maximum number of cultivators (with different scales of operations) bought inputs partly or wholly on credit. This has to be repaid with approximately 2 per cent interest per month on the total price of the purchase from these retailers who might be seed, fertiliser and pesticide shop-owners. Moreover, the farmers are obliged to sell the produce to these retailers as a condition of settling their debt in most cases.

Photos 5.6 to 5.8: Input retailers, informal traders and aggregators, a network of intermediaries, buy and trade cotton produce employing labour and transport

These retailers in turn sell the produce to cotton traders including ginning mills in the market at higher prices. There is a high degree of credit dependency and if the farmers sell their produce directly at the market (and then pay back the loan) then they might not be extended credit in the next season. Some farmers interviewed complained that even the prices of the inputs (especially seeds) are frequently inflated and sold with a mark-up on the market price by the retailers and the interest is calculated on this increased price during the repayment on the loan. Additionally, the farmers borrow money from these input suppliers for household expenses and exigencies which usually carry an interest between 2-3 per cent per month. Thus, the input suppliers double as creditors who derive their profit from the difference between the lower buying price of the farmer's output and higher selling price at the market over and above the interest extracted on the loan from the

farmer. This demonstrates that the input, credit and output markets are inter-linked where the trading of cotton starts at the villages and the farm gates even before reaching the market.

Cotton is manually weighed (using standard weights) in front of the cultivator's house or farm itself. An amount of one kilogram is deducted on every quintal as the weight of the bag which is used to weigh the cotton and farmers allege that they have been cheated on the pricing and weightage. Most of the farmers interviewed from the three villages in the district of Nalgonda complained that labourers (*hamalis*) hired by the produce buyers try to complete the whole process of weighing and loading very quickly without any proper care. On enquiry, the accountant (locally called *gumastha*) of the input retailer asserted that he double checks everything and accordingly keeps a record. After weighing the cotton, the accountant gives a slip stating the quantity of cotton and the price to be paid for each quintal procured. This is the only document of proof for the farmer against which he/she will receive payment for the produce from the input suppliers. One woman farmer appeared unable to follow the weighing procedure and price calculation when her produce was being measured and estimated. She seemed visibly confused and could not read the paper which the accountant had given her. She had bought inputs on credit from the retailer and was selling her produce to him as a condition

BOX 3 SMALL FARMER, WARANGAL

Raj Mohammad of Chowlapally village of Warangal rural district belongs to doodekula caste which is BC caste category in Telangana. He lives in the village with his wife. He has two sons. One son lives with wife and son at Mallempally in Mulugu district and works at a lorry transport office as an accountant. Another son, who is not married works as a Medical Representative at Thirupathi in Andhra Pradesh.

Raj Mohammad's household cultivates 4 acres of land of which they own 3 acres of land. This season he leased in one acre of land for which he paid Rs. 15,000 in cash as rent, in which he grows maize. His own 3 acres land and one acre leased in land has irrigation source (Dugwell).

Raj Mohammad makes all the decisions related to agriculture. He says " my main source of information/ knowledge regarding cotton cultivation is farmers in the village and the other source is the pesticide/ seed shop owner. The pesticide shop owner suggest/advise regarding the good/new seeds in the market. If the cotton plants has any pest attack, I take one plant to the pesticide shop and on seeing the diseased plant pesticide shop owner gives the pesticides to spray to control the disease. This year I used three different brands of Bt. cotton: 659, Sadananda and Moksha. This year I repeated one brand that is 659 (Raasi). I spent Rs. 25,000 on input costs for three acres. My wife and I work on the farm all through the year. My daughter-in-law comes to our village at the time of sowing and work with us. This year I got 28 quintals of cotton produce in total, I sold 3 quintals to a private trader through my money lender (also commission agent at Warangal Market) at the price of Rs. 5000 per quintal. Rs. 5000 per quintal market price is lower than the price in the previous year. I thought private market price will increase in the coming days. I needed to pay wages so I sold. When I went to the market to sell three quintals I heard about the procurement by CCI. Rest 25 quintals is stored at my home which I will sell to CCI. This is the first time I will be selling to CCI. I borrowed Rs.100,000 from the money lander at the interest of 24 per cent per annum. I told the money lender that the private price is low and I will sell to CCI and pay back the loan, to which he agreed".

of loan settlement. One input retailer maintained that they do not exploit the farmers and just tries to ensure that they themselves do not lose out in the deal. According to him, the farmers lack the capacity to buy inputs with upfront payment and want them on credit. There is no guarantee that the farmers would pay back the money and many of them default. He claims that he has to safeguard his business and hardly makes any profit. He has to hire the labour, vehicles, arrange transportation and cover other expenses as well. Whatever margin he secures is eaten up and he is only left with a meagre amount at the end of the season.

Interlinkages in input and output market are a predominant feature in cotton production and trade. If the farmers can afford to purchase the inputs with full and immediate payment, then there is no interest on credit that has to be paid to the input retailers. Since the farmers primarily buy inputs on credit and take crop loans as well as personal loans from the input suppliers, they have to repay the debt to ensure input and credit availability for the next crop cycle. Often the farmers become indebted to the retailers and there are different arrangements through which the farmers can repay this loan. They are compelled to sell their produce to these retailers at a price lower than the prevailing market price or MSP (provided by the CCI) due to which their output does not get the market price. This is an unwritten agreement which guarantees that in the next agricultural season, the farmer will be again be allowed to buy inputs on credit and also additionally borrow money from these retailers. Inputs suppliers are highly influential and have close contact with the ginning mill traders and in certain cases, are themselves owners of mill. Since the cotton is picked in three phases, all the cotton in the first phase (picking) is sold to the input retailers for debt servicing and only after clearing the debt, the farmers are free to seek other buyers paying a better price. During the field study, it was noted that often some of the small farmers and almost all of the marginal farmers in the district of Nalgonda sell all their produce to the inputs retailer even after the debt is cleared. Therefore, credit relations and loan requirements of the farmers mediate the output price and purchase of cotton and the farmers carry the burden of informal debt in an environment where access to institutionalised credit is limited, though not altogether absent.

5.2 Role of Intermediaries and Different Informal Routes of Exchange

The cotton supply chain is characterised by the presence of a series of different intermediaries who operate at various scales and in different locations to channelize the produce of the growers to the market. These intermediaries have specific arrangements with the farmers regarding the collection of the output, purchase price and terms and conditions of debt clearance. In addition to such input shop-owners mentioned above, the farmers also borrow from local money-lenders and the compulsion of paying back the loan and the necessity of maintaining a credit relation also determine the modes of selling of the cotton produce.

While input retailers also perform the task of lending, these informal groups of money-lenders are distinct since they fulfil urgent financial requirements of the cultivators in every agricultural season for farm level activities as well as household consumption and other requirements. A similar contract guides this borrowing practice in return for which the farmer is bound to sell the output at lower than market prices to the money-lender. Sometimes, they would choose between the input supplier and any other private trader who comes to the village, depending on the price offered. For crop loans, the cultivators cannot fully depend on

Table 5.2

Share of Farmer Households Obligated to Sell the Cotton Produce to/through the Money Lender

Operational holdings	% of Household
Marginal	86.7
Small	70.2
Semi-medium	73.3
Medium	73.7
Large	0.0
Districts	
Adilabad	69.6
Gadwal	80.0
Nalgonda	86.2
Warangal - Rural	54.2
Total	73.9

Source: Primary household survey (December 2019 & January 2020)

formalised credit avenues since their requirement for production capital is high. They also need monetary assistance for personal reasons and often turns to the dealers and money-lenders to whom they are obliged to sell their produce.

Table 5.1 and Table 5.2 illustrate the pattern of borrowing money and selling produce by the farmers. In this study, a total of 132 farmer households have been canvassed across four districts, namely Adilabad, Gadwal, Nalgonda

Table 5.1

Share of Farmer Households Borrowing Money from Informal Lenders for Cotton Cultivation

Operational holdings	% of Household
Marginal	93.8
Small	87.3
Semi-medium	88.9
Medium	82.6
Large	0.0
Districts	
Adilabad	78.1
Gadwal	97.3
Nalgonda	90.6
Warangal - Rural	77.4
Total	86.4

Source: Primary household survey (December 2019 & January 2020)

and Warangal-rural. It can be seen that overall a total of 86 per cent household borrowed informally with the numbers being especially high for Gadwal with almost all households drawing money from informal lenders. This does not mean that there is no parallel borrowing from banks and almost 60 per cent of the sample has taken loans from banks to finance their crop cycle (as shown in Table 3.9 in chapter 3). While in both Adilabad and Warangal (rural), the incidence of formal borrowing is almost 80 per cent among the households, in Gadwal it is only a third of the aggregate. In terms of the repayment of the loan, more than 70 per cent of the farmer households in aggregate were bound to sell their produce either to these input dealers and money-lenders or at least through them. Only 14 per cent of the farmer household in Nalgonda were not bound to sell their produce to informal lender, the corresponding figure for Gadwal is 20 per cent, 30 per cent for Adilabad. In Warangal (rural), close to half of the total farmers surveyed were not tied to money-lender for selling their produce.

Cultivators alleged that these buyers exploited them and questioned the transparency of the weighing process, money received against the produce and high rates of interest charged. However, they still prefer private purchasers over official channels of procurement. Since these intermediaries collect the output directly from the villages, the farmers do not have to incur the

Photos 5.9 to 5.11: Informal traders and aggregators buy cotton at farm gates and farmers' homes in villages, outside the regulated markets

expenditure for transportation and manage the entire logistics involved in taking the cotton to the market yard or the ginning mills for selling. There is a significant degree of uncertainty involved with selling at the market since the farmer cannot foretell what price his/her produce would fetch and the protracted waiting time which compounds the costs of transportation. In Utnoor mandal in the Adilabad district where there is a large proportion of scheduled tribe population, cotton is sold mostly to the traders/money lenders at the village itself.

There is another group of informal traders, locally known as *beraggalu* who are neither input retailer nor money lender but simply buys the kapas from farmers after the harvest and sells it to mills. In effect, these aggregators go to villages in search of cotton, collect it from several villages and take the consolidated produce to the market. They are usually businessmen with other sources of income in cities and towns in the district who come to amass the cotton during the trading season and profit from the price differential. They seek out growers who are unable or unwilling to take the produce to the market for various reasons and strike the best deal with them. Their monetary investment is in primarily renting vehicles, arranging logistics, hiring labour (*hamalis*) for loading and unloading and other associated expenditure.

During the field study, heavy vehicles arranged by intermediaries and aggregators were coming into the villages to collect cotton straight from the farmer-producer's door step or farm gates. These trucks would go from house to house in a village and then from village to village to acquire all the cotton from the borrower farmers, as observed in Nalgonda. In Utnoor mandal in Adilabad, farmers were seen carrying small bags of cotton to sell cotton at retail grocery stores in quantities as low as 5-20 kilograms. These shops would instantly pay in cash, however at a rate lower than the market price. They accumulate the small amounts of cotton and take them to the market/mill and sell at a higher price. Some grocery shop owners might be located in the village itself or in case of very small villages or hamlets, would be found in the nearest towns or bigger villages. There are similar small scale cotton traders who set up collection/purchasing centres and according to one such trader in Gadwal district, they are approached when the farmers are in immediate need of money and are unlikely to ever receive more than a quintal of cotton from one farmer.

There is a combination of storage options and selling networks open to farmers in which the different buyers of the produce can be broadly delineated into formal and informal purchasers. Informal transactions are mostly conducted at the villages through a gamut of private agents, such as input retailers, money-lenders, aggregators and other intermediaries who can perform one of more functions, as illustrated in this section. A complex set of relations exists with multiple actors involved in the processes from production of cotton to its eventual sale.

5.3 Cotton Commodity Markets

The cotton growers can also sell their output at the market through formal channels depending on the loan repayment arrangement with his/her creditor. The market usually offers a higher price and return than what the farmer can secure when trading in the village, a part of which can be mobilised to pay back the money with interest to the creditors. At the market, there are predominantly two systems of formal market exchange available for cotton. First, the cotton is bought by licensed private traders and mill owners who are officially registered in Telangana or neighbouring states of Andhra Pradesh, Karnataka, and Maharashtra. Second, cotton can be procured by the state at the

Photos 5.12- to 5.14: Weighting scale technologies – electronic weighing bride, electronic weighing platform and traditional manual weighing balance. Fair weight measurement, an important parameter of terms of trade, is compromised by the use of manual scales and manipulation by traders.

MSP to protect the farmers from volatile market prices which might force them into distress selling at rates which would not even cover their cost of cultivation. The central government agency designated for MSP operations in the case of cotton is the Cotton Corporation of India (CCI).

For private purchase at the market, the farmers are supposed to sell to traders registered with the APMC. APMCs at the state level oversee and regulate markets for the trade of different agricultural commodities. They are constituted under and governed by the Telangana (Agricultural Produce and Livestock) Markets Act, 1966 and are empowered to notify and administer market yards (*mandi*). The Act prohibits trade of notified commodities outside notified market which also includes registered ginning mills that need license for purchase of cotton, ginning and sale of bales of cotton fibre. The price of cotton depends on its quality which is mainly determined by the

moisture content, colour and the staple length. Irrespective of whether the cotton is bought by the state agencies or private traders/mill owners (from within and outside the state), the cotton is headed to be ginned at the mills. Ginning is the first stage in the processing of cotton through which the cotton fibre is separated from the seed, dust particles and other impurities. Ginning is a mechanised operation after which the cotton fibre or lint is pressed into bales mostly using pressing machines. In the progression of the supply chain, these bales are then destined to spinning mills (where they are converted into cotton yarns), mostly located outside Telangana.

There are functionaries called commission agents who are licensed by the state agricultural department to facilitate the market transaction of cotton and mediate between the private buyers and farmer sellers. These agents act on behalf of the farmers and can operate anywhere in the state in any agricultural market yard for any notified agricultural produce. Every three years, their license has to be renewed and they usually have taken offices on rent in the market yard. Farmers cannot depend on the process of trading without the commission agents and the potential buyers cannot seek out individual farmer-seller, who often bring small quantities of cotton for sale. In most cases, the purchaser (trader) and the seller (farmer) of the cotton are not known to each other and the commission agent serves as the link between the two. Under the monitoring eye of the state appointed market officials from the APMC, the commission agents ensure that all legalities are followed during cotton trading. In exchange of their services, these agents are allowed to charge a prescribed commission from the parties concerned and the farmers selling through a commission agent has to pay a certain percentage (2 per cent in Warangal, 1.25 per cent in Adilabad and 2.5 per cent in Nalgonda) of the value realised after the sale of the produce as the agent's fee or commission.

Each commission agent has a set of farmers approaching from specific villages and in certain areas, it was found that almost all the farmers contact the commission agent before coming to market with their produce. The commission agent instructs the farmer to unload the produce at a particular place in the market and it was observed that over a period of a week, no farmer arrived without informing the commission agent at Enumamula market in Warangal (urban) district. In the market yard, there are numerous heaps of bags full of cotton spread over a large area and it is impossible for a trader to visit every heap or lot and ascertain its quality. The transaction happens with the help of commission agents who invite traders and negotiate for the best price of the farmers' produce and in effect acts as farmers' representatives. He quotes a price for a lot and each of the traders separately quote the price they are willing to pay for that particular lot. If the agent feels the quality of the cotton warrants a higher price then he persuades the traders to increase the bidding price. The private traders take turns to quote their purchasing price and finally the agent seals the deal with the highest bidder.

The trader does not directly pay the producer (seller) and the proceeds from the sale goes to the commission agent who gets the money from the traders after a fortnight. If the farmer is not ready to wait for 15 days and would prefer to get the money immediately, then he/she has to forego an additional one per cent of the value of the sale over and above the official fee for the services of the commission agent. Most farmers choose to get paid on the same day and the agent gives the money in cash immediately after deducting various charges like market fee, loading and unloading charges, weighing charges etc.

Commission agents can also act as money-lenders from whom the farmers borrow for

operational costs, regular household outlays and in times of need and crisis. In these cases, the loan amount is also settled at this time and the premium and interest are subtracted from the payment due to the farmer. Sometimes, these agents can also be input retailers who provide agricultural raw materials on credit to the farmers before cultivation. The significance of commission agent varies across different markets and changes over time. Generally, commission agents are not active when the CCI is present and procuring directly from the farmers or through designated procurement centres i.e. the ginning mills. However, the cotton rejected by the CCI (which has strict quality criteria) is sold to private buyers through the commission agents and also in cases when farmers are unable or unwilling to sell to the CCI.

In contrast to the Enumamula agriculture market, there were no commission agents on the day of the visit in the Parkal market yard in Warangal (rural) district. On the other hand, there are 9 commission agents in the market yard of Mallepally in the Nalgonda district. According to one such agent, farmers from 25 villages from three mandals, namely Gurrampode, PA Pally and Kondamallepally come to this market yard. Though this is a vibrant trading market for other crops and grains, cotton trade has seen a slow decline. Small-scale farmers approach the commission agents with small quantities of cotton, sometimes as low as 5 quintals. Over time, the number of farmers has drastically reduced after the dealers (intermediaries) have started purchasing cotton in the village itself and selling in Guntur (in Andhra Pradesh) and other big market centres. One commission agent clarified that the cotton of inferior quality that is generally not accepted by the CCI is sold at the Mallepally market. Due to the high moisture content, the cotton has to be dried (which adds to the work as well as the cost in paying the labourers) before they can find a suitable buyer. He mentioned that the farmers also borrow money from them and sell cotton through them after the harvest to clear

Table 5.3

Different Sites and Modes of Selling Cotton (fully or partly) to Private Traders (in%)

Household categories based on Operational holdings	Through Commission Agent in market yard	To trader or owner of a ginning mill at the mill	To a trader in the village (at home or field)	To a trader outside the village	Other	Total
Marginal	37.5	0.0	12.5	0.0	50.0	100.0
Small	27.6	3.4	37.9	6.9	24.1	100.0
Semi-medium	12.0	12.0	56.0	4.0	16.0	100.0
Medium	8.3	0.0	83.3	8.3	0.0	100.0
Large	0.0	0.0	0.0	0.0	0.0	0.0
Districts						
Adilabad	9.1	9.1	81.8	0.0	0.0	100.0
Gadwal	13.3	6.7	46.7	26.7	6.7	100.0
Nalgonda	0.0	0.0	51.7	0.0	48.3	100.0
Warangal - Rural	63.2	10.5	26.3	0.0	0.0	100.0
Total	20.3	5.4	48.6	5.4	20.3	100.0

Source: Primary household survey (December 2019 & January 2020)

their debt. Another commission agent said that they typically charge 2.5 per cent commission and deduct one kilogram if cotton is weighed along with the bag. He complained that cotton is no longer as profitable as it was before the CCI came.

This section has discussed the various mechanisms of and actors involved in marketing the farmers' produce through formal and informal networks. It has also expanded on the myriad roles of these players and the diverse channels of material movement that remain embedded in the socio-economic relationship between these traders and the cotton growers. Out of the 132 farmer households surveyed, 74 households or 56 per cent of the sample were found to sell their output fully or partially to private traders, with or without official licenses. It should be noted that more than a half of the cultivators studied are unable to fully access and benefit from the MSP offered by the CCI and resort to private selling avenues. Table 5.3 elucidates the different sites and modes of selling cotton through such private channels disaggregated by the size of cultivated/ operational landholding of the farmer household and the district-wise location.

Across the districts (except in Warangal), traders at the village emerge as the most important buyer of the produce and in Nalgonda, creditors/ input suppliers (subsumed under the category of 'other') are a close second. It must be mentioned that due to the high incidence of state procurement at MSP by the CCI in this agricultural season, the dynamics of buying and selling is different from what have prevailed in earlier years. While selling through commission agents at the market yard was found to be most common in Warangal, these actors overall catered to one-fifth of the total farmer household canvassed in the survey. However, detailed qualitative study captured their importance in previous years where farmers stressed their close relationship with these agents in selling their produce at the market. This year, CCI is a major player in the procurement of cotton in the market yard and through ginning mills which are procurement centres allocated by the CCI. This has somewhat diminished the importance of commission agents compared to earlier years and is contrary to the practices that prevail in years when the CCI is not operational.

Commission Agent in market yard and trader/ owner of a ginning mill at the mill constitute the formally registered networks of selling cotton that is available to the growers. The remaining modes of selling can be classified as informal trading routes in which various intermediaries are active and directly securing cotton from the farmers and taking it to the market. The number of farmers selling to a trader at the village is half of the aggregate sample (i.e. 66 households out of the 132) which is the most common method of selling in all districts except Warangal where maximum farmers sold through commission agents at the market yard. The selling of cotton (partly or wholly) to private traders mostly involves various actors as can be seen from Table 5.4.

Input suppliers who also function as creditors were involved in cotton transaction for more than half of the farmer households after which followed the commission agents who also provided loans to farmers. The category of 'none' refers to farmer households who have directly sold to CCI without the involvement of any intermediary or aggregator in the transportation and transaction of the produce. Given the effect of CCI, commission agents have been found to be less prominent in the process of selling at the market yard or ginning mills. However, the farmer-producers prefer to continue their long association with these commission agents to ensure access to their services in times when the CCI is not buying their produce. This year MSP offered by the CCI is much higher than the market price offered

Table 5.4

Types of Actors involved in Private Selling of Cotton Produce (in%)

Household categories based on Operational holdings	Money lender	Money lender cum Commission Agent	Commission Agent	Inputs creditor (seed/pesticide/ fertilizers)	None	Other	Total
Marginal	0.0	37.5	0.0	62.5	0.0	0.0	100.0
Small	7.7	19.2	11.5	46.2	3.8	11.5	100.0
Semi-medium	4.3	13.0	8.7	52.2	7.4	4.3	100.0
Medium	0.0	10.0	10.0	60.0	10.0	10.0	100.0
Large	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Districts							
Adilabad	9.1	9.1	0.0	63.6	18.2	0.0	100.0
Gadwal	0.0	9.1	27.3	9.1	18.2	36.4	100.0
Nalgonda	3.4	0.0	0.0	89.7	6.9	0.0	100.0
Warangal - Rural	6.3	62.5	18.8	6.3	0.0	6.3	100.0
Total	4.5	17.9	9.0	52.2	9.0	7.5	100.0

Source: Primary household survey (December 2019 & January 2020)

by the private traders. This has re-aligned the relationship between the commission agent and the farmer. In Warangal, many farmers took permission from the commission agents before selling the cotton to CCI and paid commission to the agents despite not selling through the latter. This can be attributed to the farmers' long-standing credit relations with the agents and the unwritten condition which allows the farmer to continue borrowing from the agents in successive seasons. The commission agents' financial support in the next crop cycle is contingent on sustaining this relationship. Also in the forthcoming years, the market price might be higher than the MSP and the farmers would need the services of the agent to sell their produce to private traders.

Thus, the farmers depend on the commission agents for their enduring need for credit and in some cases, have inherited this association from the earlier generation. In Nalgonda district, the market yards are smaller and not the purchasing points for CCI (unlike in Warangal and Adilabad) but facilitate purchases either by CCI or through private auction. Here, the commission agents have also started acting as traders and not simply as mediators as is the convention. Farmers sold cotton in small quantities to the agent who would stock up the produce and sell it in bulk in ginning mills of Guntur where there is a bigger market and a higher demand for cotton. Nevertheless, the importance of commission agents has diminished substantially this time due to active procurement of CCI. The farmers and officials in the Adilabad market reported that the commission agents and private traders have very little role this season.

5.4 State Procurement by the Cotton Corporation of India (CCI)

The trading of commercial cotton in Telangana in notified markets is done under the supervision of the Agricultural Produce Market Committees (APMC) which are present across the state. The APMCs play a major role in the trading


5.15


5.16


5.17


5.18

Photos 5.15 to 5.18: Farmers and vehicles waiting at CCI procurement centres to sell their cotton produce. Owing to disproportionately low number of CCI procurement centers, farmers have to wait for long hours and at times more than a day or two, and incur additional transportation charges for hired vehicles.

of all agricultural produce and in Telangana there are 189 APMC yards and 87 sub yards which are under the Department of Agricultural Marketing, Government of Telangana. This year, 153 market yards (including ginning mills) have been notified for cotton procurement. The market price for cotton produce did not go beyond the MSP for this year. This has made the government agency i.e. Cotton Corporation of India (CCI) the main buyer of cotton in the market. By the end of the procurement for 2019-20, CCI procured as much as 1.7 million bales from Telangana, which was 0.78 million bales in the previous year.

In the previous years, the market price was greater than MSP (or quite close) since there was a speculation about higher international price of cotton. If the difference between the two is not substantial, farmers choose private purchasers for the kapas due to CCI's high standards of quality and bureaucratic hurdles. In collaboration with the agricultural marketing department of the state, CCI has identified ginning mills as procurement centres which are supervised by the cotton purchasing officers (CPO) from each regional branch. In this agricultural season, almost every mill is a CCI procurement centre and the CCI reached farmers up to the nearest ginning mill. These procurement centres are managed by CCI and the state agriculture marketing department facilitates with basic infrastructure, maintenance, administrative modalities and logistics required for trading of commercial cotton. CCI has

three regional branch offices in Telangana and there is one each in Adilabad, Warangal and Mahabubnagar which oversee state procurement in the entire state.

Wherever present, the agricultural market yards notified for cotton are the sites of procurement of commercial cotton by the CCI. The districts of Adilabad and Warangal house big market yards for cotton trading but the market structure is quite dispersed in both the districts of Nalgonda and Gadwal with clustering of ginning mills. In Nalgonda and Gadwal, APMC has notified mills where CCI procures cotton from farmers under the supervision of APMC officials. In the district of Nalgonda, CCI has leased in 24 ginning mills to function as procurement centres and separate seed and fibre through ginning. Similarly, in Gadwal town, CCI is purchasing from the farmers in the designated mills as there is no market yard. There used to be a cotton purchasing centre run by the APMC but it was dismantled a few years ago from the time when the CCI started purchasing in Gadwal. That centre was too small to accommodate CCI procurement and CCI leased in individual ginning mills in the district with the APMC assisting in procurement operations.

Ginning mills are taken on lease by the CCI and paid on the basis of weight of cotton i.e. price per quintal by the agency. Using machinery for ginning and pressing equipments and labour, the mills process the kapas to separate the seed and fibre after which the fibre is pressed into bales. The CCI buys kapas from the farmer, gets it processed at the ginning mills and sells the bales onwards to spinning mills. There are no spinning mills in the districts of Adilabad and Warangal and mostly the bales are transported to other states where there are spinning mills. The cotton seeds are used for oil production. In Adilabad, a ginning mill owner confided that the CCI has saved both the farmers and the ginning mills this year. Because the CCI is purchasing most of the cotton coming into the market, it is also leasing in all the private ginning mills for making bales. This helped many ginning mills by providing them with much needed work and saved many from closure. Every functioning ginning mill in Adilabad is leased-out to CCI. In Nalgonda, another ginning mill owner said that they are getting paid this year only because of the CCI which is paying Rs.1150 per bale. Depending on the capacity of the mill and the machinery, a mill can produce 100 to 400 bales per day.

However, many ginning mills are unhappy with the MSP and one of the owners said that the state should instead help farmers by giving loans, subsidies and providing better technological inputs. Unilaterally increasing the MSP disrupts the normal functioning of the market and distorts competitive pricing. It also creates an unfavourable environment for ginning and spinning traders, and puts a lot of burden on the government. One ginning mill owner argued that nobody thinks about the demand of the bales and the government has not been able to sell the bales from last year, so there is a need to change their policy. There is an agreement between the ginning mills and the CCI which states that if the moisture content exceeds the stipulated amount then deductions will be made in the payment towards the mills 'as per value of lint of exceeded moisture percentage' (Agreement for Engaging Ginning and Pressing Factory for Cotton Season 2019-2020). Deductions will also be made if the impurities in the cotton exceeds the stipulated percentage. The mill must also ensure there are no yellow pickings, cut seeds/full seeds in the bales. Therefore, CCI provides strict guidelines for the mill traders to maintain quality and carefully undertake ginning operations.

There is no agency of the state government to procure cotton produce and the government

of Telangana (through APMCs and its marketing department) has campaigned extensively for CCI. In Adilabad, the district administration has been very active in informing farmers about CCI operations. CCI is purchasing cotton at a maximum price of Rs.5500 and a minimum of Rs.5225. It has a very stringent quality control and the baseline for the moisture content in cotton is 8 per cent. It rejects cotton if the proportion of moisture content exceeds 12 per cent and thus only accepts within the optimum range of 8-12 per cent and lower the percentage of moisture, the higher the quality and price of the produce. In this season, CCI had started procuring on 14 October 2019 and finished procurement on 21 February 2020. During the field study in December, in the Adilabad market yard, there was a rumour that the CCI will close down its operations soon. This led to a large number of farmers bringing in cotton on the same day and gathering at the market yard. There was overcrowding and chaos and the District Collector appealed to the farmers and ensured them that the CCI will continue to procure. According to latest news reports, since many farmers are still waiting to sell their produce, CCI has declared further dates for procurement through a system of token distribution.

The objective of the CCI is to protect the farmers when market price of cotton is low and help them in realizing a price that is commensurate with the quality of their produce. It strives to ensure that only the legitimate producer gains from the MSP and prevents other middlemen and intermediate traders from making undue benefits at the expense of the farmers. Thus, it demands proper documentation from the farmers and purchases cotton only after verifying that the seller is the bonafide producer. For this purpose, the CCI procures cotton directly from farmers identified by the state government. The Agriculture Extension Officer from the state agricultural department certifies the farmer with a cotton card in which the size of the landholding and the number of acres on which cotton crop is cultivated are recorded. A farmer is eligible to sell a maximum of 12 quintals for every acre of cotton produced to the CCI. The farmer also need to provide land passbook, identity proof (Aadhar card) and copy of bank passbook. These documents establish that the beneficiary of the MSP is the individual who has cultivated cotton. This year, many farmers are selling to the CCI for the first time.

By rule, the CCI only purchases cotton from open vehicles and not from gunny bags and the latter are purchased by private traders. It conducts a preliminary testing of the quality of the cotton that comes in trucks, tractors and other vehicles and directs them to a private cotton mill assigned as the CCI procurement centre as seen in Adilabad and Warangal. A gate pass is issued to the vehicle mentioning the name of the mill where the farmer has to take the vehicle. In the ginning mills, the CCI official i.e. the CPO checks the cotton and only accepts the lot with moisture content within the range of 8-12 per cent. If the produce is of desired quality, the net weight of the cotton is calculated by separately checking the weight of the entire vehicle (with the cotton) and then only the empty vehicle after unloading the produce. Weighing machines (for bags) or weighbridges (for vehicles) are used depending on the quantity of cotton to be measured and the APMC has assigned a person for this exercise. At every procurement centre, there are several APMC appointed staff like the supervisor and data operators (usually outsourced) who verify the identity of the farmer, check the necessary documents, maintain a database of all the cotton sold to the CCI by each farmer after entering all the details. Thus, APMC facilitates as well as supervises the entire process of procurement and data entry for MSP operations of the CCI. Data is fed into a software which is linked to the databases of National Informatics Centre, Revenue

Table 5.5

Share of Households Selling to the CCI (in %)

Household categories based on Operational holdings	Yes	No	Partly	Total
Marginal	6.3	93.8	0.0	100.0
Small	16.4	80.0	3.6	100.0
Semi-medium	30.6	69.4	0.0	100.0
Medium	47.8	52.2	0.0	100.0
Large	50.0	50.0	0.0	100.0
Districts				
Adilabad	62.5	37.5	0.0	100.0
Gadwal	2.7	97.3	0.0	100.0
Nalgonda	12.5	81.3	6.3	100.0
Warangal - Rural	25.8	74.2	0.0	100.0
Total	25.0	73.5	1.5	100.0

Source: Primary household survey (December 2019 & January 2020)

Department of Telangana and the Agriculture department of Telangana. Since the tenant farmers do not have any land ownership document, they are not registered. They are required to bring a certificate from the AEO designated for that village as proof.

Table 5.5 depicts the pattern of selling cotton to the state agency i.e. Cotton Corporation of India (CCI) by farmer household classified according to the size of the cultivated land and their location. CCI buys the farmers' output at MSP when the market price of the produce is so low that the farmers struggle to recover their cost of cultivation and secure a minimum remunerative price. The table demonstrates that only about a quarter of households sold cotton to CCI. There is a huge variation between districts - maximum producers sold to the CCI in Adilabad while only a miniscule did so in Gadwal. The figures from the other two districts also show that a greater proportion of farmers did not sell to the CCI. While these numbers are not strictly representative of the entire population of the cotton growers in these four districts, they appropriately indicate the broad practices that prevail in these areas. In terms of landholding size, a very clear trend emerges which shows that the bigger the farmer, the greater the likelihood of selling to the CCI. Even less than one-tenth of the marginal farmers are benefiting from the MSP in our sample and accessing the state procurement channel during the course of the field work.

Another factor influencing the low percentage of farmers selling to CCI is that the procurement process was ongoing and later pickings of cotton were on their way to the market; finally procurement continued in February 2020 as well. According to the farmers' understanding with the creditors, usually the first couple of pickings are sold to the latter to repay the loan and there is a possibility that proportion of farmers selling their later cotton pickings to the CCI would be higher by the end of the season.

It is important to investigate why farmers were unable to sell to the CCI or choose other mechanisms to understand their incentives,

obstacles and challenges. In Warangal market yard, it was noted that many farmers who brought cotton produce in open vehicle were unwilling to sell to CCI and intended to sell to the private traders. The reasons cited by the growers for not selling to the CCI vary from issues with documentation proof, sub-standard quality, delay in procurement process, delay in payment, lack of awareness of CCI operations and prior understanding with creditors for selling produce etc. This primarily means the most of the farmer sold their produce at less than MSP offered by the state due to various reasons. However, it should be noted that the CCI continued its procurement beyond the period of fieldwork and this might add to the number of farmer households selling to CCI.

The government endeavours to encourage farmers to sell their produce directly to CCI and realise the benefits of the MSP. The procurement exercise of the CCI is strictly designed and monitored so that the intermediaries who eat up the farmers' margins are removed from the system. The state government took keen interest to make the MSP operations more accessible to the farmers by directing all APMCs to facilitate essential logistics and infrastructure and also disseminating information among the farmers. However, there exists a rampant practice of private traders and intermediaries making use of the producer's document to sell to the CCI by posing as actual cultivators. Since the MSP was the highest price to be accrued for cotton this year, the input retailers, money-lenders and other informal traders all tried to manipulate the system. They would collect the farmer's document which entitles them to sell to the CCI. They do not collect documents from all farmers, only enough to cover the total amount of cotton to be sold following the criterion of an upper limit of 12 quintals per acre accepted by the CCI. The farmers are also paid Rs.500-600 to physically go to the procurement centres of CCI. In a village in the Nalgonda district, huge DCM (Delhi Cloth & General Mills) vehicles were stationed with a *gumastha* who worked for a big input retailer. A group of 12 *hamalis* were employed to collect cotton from 25 farmers and the *gumastha* estimated that from this village, 5 vehicles worth of cotton can be send to the CCI. Altogether, 30 vehicles of cotton have been sourced from different villages which had the customers (cotton cultivators) of the retailer. Three vehicles were rejected by the CCI due to inferior quality but the rest were successfully sold. Though not explicitly stated, it was evident that this input supplier had produced the required documents before the CCI to establish himself as a farmer and sell the collected cotton.

In a fertiliser shop in Nalgonda district, the owner was seen counting bills which turned out to be cash receipts obtained from selling cotton to the CCI. He had a bundle of farmer's documents that he has used for this purpose and have managed to sell 1125 quintals of cotton to CCI in this manner. He said that though few trucks could not initially pass the CCI's quality test, they were again accepted after the cotton was dried. He admitted that there is a possibility that the CCI officials might recognise him as a fraudulent farmer having seen him frequently during the season but he is carrying the documentary evidence. One APMC official in Nalgonda explained that most of the cultivating farmers bring their produce in tractors. If the cotton is brought in very big trucks and lorries then there is a suspicion that it can belong to a 'broker' or a 'dealer'. But if they furnish the required documents, then the APMC cannot deny them. A ginning mill owner similarly echoed that it is hard to discern who are not genuine farmers if they bring all the mandatory documents. Even if he can recognise and tell them apart, the private traders cannot be asked to bring the actual farmer. The cotton has already been bought from the farmers who owe money to these intermediaries

BOX 4 A FARMER'S ORDEAL IN PRODUCE MARKET

Case Study 6: Kumaraswamy, Damera village, Warangal Rural

Kumaraswamy brought his cotton produce to the market yard at Warangal in an autorikshaw trolley (vehicle). His mother Bathukamma also accompanied him. They arrived at the market at 6 AM. The vehicle driver is also from his village. In the vehicle they brought two sets of cotton produce. One set they brought in gunny bags and the other set they brought in open vehicle. After arriving at the yard Kumaraswamy unloaded the bags at a designated place in the market yard and the open vehicle with cotton was parked at another designated place. There are two separate designated places in the market yard. One place for the cotton that arrives in bags and the other place for cotton that comes in open vehicles. Because Kumaraswamy brought cotton in two sets, his mother accompanied him so that they can guard the cotton at two different places in the market yard till the sale is done. The cotton that is brought in bags to the market are purchased first by the traders after that the private traders purchase at the open vehicles. Kumarasawmay asked his mother to stay at the open vehicle and he would sell the cotton in the bags and come to the vehicle.

At Warangal market the auction happens at 8:35 AM. The day (November 18, 2019) Kumaraswamy came to the market the auction got delayed. The Telangana Cotton Miller's & Traders Welfare Association as a mark of protest refused to engage in cotton trading on that day. There was confusion in the market. But the commission agents present in the market were assuring that trading will take place. Kumaraswamy brought the cotton produce to the market after calling and informing the commission agent. The commission agent arrived at the place when Kumaraswamy unloaded his produce brought in the bags. The commission agent told the auction will be delayed and the trading will happen after the auction. On that day, the auction started at 9:40 AM and the market price for the day was Rs. 4935.

In the two sets of cotton that Kumaraswamy brought, one was good quality compared to the other set he brought in bags. He segregated cotton at his home before bringing it to the market. His intention was sell two sets of cotton to the private traders through same commission agent.

After the auction, the commission agent sold cotton to a trader on behalf of Kumaraswamy. The private trader paid different price for different bags based on his quality assessment. The private trader's price was ranging between Rs. 3000- Rs. 4000. After the sale of cotton in the bags he went back to his mother who was guarding the cotton in the vehicle. After reaching his mother he came to know that the CCI is willing to purchase his cotton produce at MSP and they have given a receipt with details of the vehicle and the ginning mill to which he has to take the cotton. MSP was higher than the market price. Kumaraswamy inquired with CCI personnel, and they told him he would get better price than what he got this morning and he needs to get his documents like Aadhar Card, Land passbook and Bank Passbook. Kumaraswamy told he did not get any of these documents with him. The CCI personnel told him to get the digital photo of his documents on his phone and get a print of those documents. He called his friend in the village and asked him to go to his home and send the photos of the required documents. He called up his commission agent and told him about the CCI price. His commission agent arrived at the vehicle and discouraged him, he told CCI will delay in payments. Commission agent insisted him to sell to a private trader. Kumaraswamy told the price difference is very high, private traders are offering him a very low price. After a lot of negotiation the commission agent let him sell to CCI. The commission agent was under pressure in the environment where media was present and CCI was monitoring the activities on the yard.

Kumarswamy told his commission agent to make the payment to his mother that is due after the morning's sale of cotton that is brought in the bags and he accompanied the vehicle to the ginning mill, Meenakshi Cotton Industries.

At the ginning mill there were large number of vehicles in the queue. His vehicle joined the queue and he went to verify his documents. During the verification of the documents he found out that there was no record of land on his name. AMC personnel present at the CCI procurement centre suggested him to get documents of any of his friends or relatives. Kumaraswamy called his sister and got her documents on WhatsApp. He went to the office with the new set of documents. The official verified the documents and found that the ownership of the land was only 34 guntas (40 guntas equals one acre) which is less than an acre. But the cotton he brought with him weighs 11.30 quintals and the clerk said it is not possible for him to sell cotton to CCI because CCI has a cap of 12 quintals per acre. And his new documents show less than one acre land ownership for which he cannot sell 11.30 quintals. He called his commission agent and asked him if can sell to any private trader. The agent told him that there are no more transaction happening on the market yard and he asked him to bring cotton tomorrow.

Kumaraswamy said that he made a mistake by trying to sell to CCI; he did not know that he has to go through this ordeal and was almost in tears. He pleaded with the AMC/CCI personnel to buy his produce, they told him to get another set of documents in which the land passbook has land ownership of more than 1 acre. This time he called his friend for documents and his friend obliged and sent him the documents. He submitted the documents of his friend, Aadhar Card, Land Passbook and Bank passbook and these documents were accepted and the sale was done. He sold 11.30 quintals at the rate of Rs. 5302.35 per quintal. And he would get Rs. 59,917.35 in total for 11.30 quintals. The money from the sale of cotton to the CCI would be credited into his friend's account. Kumaraswamy paid Rs.500 to the clerk present at the office for helping him with the documentation issue.

and willingly sell their produce to them.

These networks of dependency are widespread in the community of cotton growers who rely on these intermediaries for not just loans but also information and advice on suitable inputs, best time to sell cotton etc. Therefore, the passage of the cotton produce from the farm to the market is navigated through numerous actors, where the output changes hands several times before finally reaching the market.

5.5 Market Structure and Market Yard Auctioning

The market for cotton is usually active from October to May. October to January are the peak months for trading in cotton in the market yards and ginning mills. Since market yards are not present everywhere (like in Gadwal and Nalgonda), trade in commercial cotton also occur in notified mills dispersed across the districts. In Adilabad and Warangal, the ginning mills are concentrated in a centralised market structure and every yard has a clustering of such mills.

There are five APMCs in Adilabad district and they are Adilabad, Boath, Indervally, Ichoda and Jainath. The APMC at Adilabad town facilitates transparent exchange system. The raw cotton that is brought into the market yard is properly documented and the APMC is actively involved in regulating all activities related to cotton trade. The market yard has eight weighbridges to cater to different weighing needs. The farmers bring in cotton to the market using different transport vehicles which include three-wheeler auto-rickshaw with trolley, tractors,

medium sized trucks, big lorries and also bullock carts. Depending on the size and/or capacity of the vehicle, the load of the cotton is sent to specific weighbridges which has varying carrying capacity. Details like volume of the cotton, its quality (especially checked for moisture), details of the vehicles with cotton load and name of the farmer are recorded by the APMC officials. Additionally, the details of the commission agent through whom farmer is selling is also noted if the cotton is being sold to private trader. This record is useful in case of dispute because the APMC also keeps track of the transaction between the commission agent and the farmer. A detailed receipt is given to the farmer who then takes vehicle with cotton to the designated ginning mill where the cotton is unloaded for exchange. All cotton arrives in open vehicles and as a rule, CCI only purchases cotton coming in open vehicles and not packed into gunny bags. With the CCI as primary buyer this year, only farmers coming to market from within Telangana are allowed to sell. Adilabad district borders Maharashtra and every year, many truckloads of cotton come from the districts of Maharashtra and are sold to private traders. However, since CCI is purchasing in this season and all the official documentation and/ or verification is done by the state government, cotton coming from Maharashtra is not procured by the CCI.

Warangal (rural) has 5 APMCs, namely Atmakur, Parkal, Narsampet, Nekkonda and Wardhannapet. The APMC at Warangal town has the biggest market yard in the district, both in terms of volume of cotton coming in and also the physical space allotted for the market. The Warangal market is popular for cotton commodity trading and attracts farmers from distant places because the produce brought into the market is purchased and the payments are paid on the same day. During interaction with farmers during the research, many opined that the market is transparent and gives the best rate compared to any other market in the region. In the course of the field study, it was evident that the purchasing price by the private traders was never higher than the MSP offered by the CCI. The market has separate areas demarcated for cotton which is brought in open in different types of vehicles and that which arrives in bags (and then loaded on vehicles). This is unlike Adilabad where cotton only arrives in open vehicles. While CCI buys open cotton, it disregards the big trucks belonging to private traders who bring in high volume of cotton


5.19


5.20

Photos 5.19 & 5.20: Delay in CCI procurement is also due to overloading of cotton beyond the capacity of ginning mills

accumulated from farmers in the villages. Another point of distinction between these two markets is that in Adilabad, CCI is not completely averse to procuring cotton from bigger vehicles. This is due to fact that as a result of bigger farm size and higher productivity in the district, cultivators have greater yield and volume of produce that require bigger vehicles. The CCI does not buy cotton that is brought in gunny bags and these are left to the private traders.

Auctioning is an important activity in cotton trading which lost much of its glory this year in Adilabad market yard due to the strong presence of CCI as the purchaser. In case of private trading (when CCI is not procuring), auctioning is a transparent process where farmers are present and selling through commission agents. Everybody is cognizant of the trading prices and hence there is less information asymmetry and an overall atmosphere of healthy competition. At the start of the day, the market price of the cotton is decided through *jhenda paata* (literally translates into *flag auction*) for the best quality cotton lot. At the Warangal market (where auctioning still commanded a lot of interest this year), this procedure begins at 8.35 am with the APMC supervisor and the private traders. The latter is aware of the price of cotton in the open market and the internationally prevailing demand on the basis of which the market price is determined. The APMC supervisor conducts the auction after selecting a lot of bags that he deems is of best quality. The supervisor stands on the bags and starts the auction with a base price and the traders present in the yard participate in bidding till a final price is arrived at. The private purchasers through bidding fix the upper limit and for that day, the purchasing price will not exceed this market price, though it can go down. This price is also applicable for the cotton arriving in the vehicles.

CCI starts its activity in the market after the auctioning process once the market price is fixed for the day by the private traders. In Warangal market, the CCI officials identify the loads of good cotton to buy and issue gate passes for the mills till 10 am. Only after 10 am, the private traders are allowed to come to the area where open loads of cotton are present and buy from the farmers who were either not willing to sell to CCI, or did not have necessary certificates for state procurement or whose cotton has been rejected by the CCI due to low quality. The private traders, officially registered with the APMC bid for individual heaps of cotton, a process that is usually mediated by commission agents. The role of APMC is to set the day's market price after which it maintains detailed records of every sale happening in the market yard, as explained above. When the farmer is coming to market, he/she informs the commission agents who then asks a group of traders and mill owners to assemble for the auctioning. The commission agents bargain and conducts the process on behalf of the farmer against which he receives a commission. The traders randomly cut opens some bags to check the quality and once an agreement is reached between them and the commission agents, the cotton is weighed by the APMC official. The quality of the cotton is checked and if the trader finds some cotton of inferior standard then he lowers initially decided price depending on the quality and the traders' willingness to pay. Each bag might have a separate rate and price can vary substantially within a single farmer's lot. It was seen that auctioning in the market yard at Narsampet mandal in Warangal is not regular and the yard is much smaller. On the day of the visit, auction did not take place and there was only a single trader present who was negotiating the price with the seller and purchasing the cotton. The price fixing procedure arrives at different market prices in different places and the APMC

secretary at Parkal informed that the maximum price of the cotton per quintal is usually Rs.200 less compared to that in the Warangal market.

In Adilabad the auction starts at 9:30 AM. It was found in the field study that the auction at the market did not elicit much interest from the farmers or the traders because the market price was always below the MSP. MSP operations by CCI commanded all the attention at the Adilabad market yard. The Warangal market price acts as some kind of reference at the auctioning process at Adilabad Market. After the auction, the market price of the day as determined in Adilabad market is put on the notice board. The Warangal market price of the day is also prominently displayed on the board. There is provision on the board for display of market prices of Jammikunta market, Karimnangar market, Khammam market, though it was observed that only the Warangal market price is displayed. Analogous to the auctioning process in Warangal, in Adilabad an APMC supervisor carrying a flag reaches a designated spot in the yard. The APMC officials announce the start of the auctioning till the market price of the day is fixed through the bidding of the private traders in a similar manner.

An official at the market said this year there is no enthusiasm in the auctioning as traders do not expect much profit due to the presence of the CCI. Licensed private traders who are also ginning mill owners say bulk of the cotton arriving at the yard is purchased by CCI. The mill owners were reluctant to buy the produce themselves and encouraged CCI procurement in their mills. Most of the registered ginning traders thought that the cotton market was in crisis and the rate at which their bales are sold is extremely low and thus refrained from buying kapas. In the existing circumstances in the presence of CCI, they can only buy at a price not less than the MSP which they consider unreasonable in view of the current international demand and domestic textile market scenario. Last year they have procured actively with prices higher than the MSP since their speculation was favourable with an expectation of profit. However, towards the end of the last agricultural season, their expectations were thwarted since the market demand and absorption of bales turned out to be quite low. Riding high on international demand, private speculation and increased MSP (by 28 per cent in the last annum), many farmers have shifted to or taken up cotton cultivation. Over the last one year in Telangana, there has been the largest spike in land acreage for cotton cultivation but not commensurate production due to the problem of rain. This shows how changes in global market demand, trading patterns and state price structure affects the decisions of local actors who participate in the cotton supply chain.

There is no large scale auctioning in Nalgonda and Gadwal where the two parties (buyers and sellers) bargain and decide the selling price. There are many more intermediaries selling with farmer's certificates in Nalgonda compared to Gadwal. In Nalgonda, there are many farmers who had never travelled to the market themselves and their produce was secured by input retailers, money-lenders or other informal intermediaries from their villages or fields as reflected in Table 5.4 and 5.5. For the farmers of Gadwal, Raichur in Karnataka is an important market. Located 50 kilometres away from Gadwal, Raichur has many ginning mills and big APMC market yard where cotton is sold to the mill traders through commission agents. There was no auction in Raichur and last year, the price was around Rs.6000 per quintal but it is below the MSP this year. In Devarakonda and Mallepalli in Nalgonda district, the operations of another group of private brokers were noticed. There were several offices marked 'Cotton Agents' which was just a single room structure with laid-out beds, a couple of registers and an agent. These

are non-licensed traders who simply connect and facilitate mediation between cotton buyers and sellers. According to one such agent, buyers coming all the way from Guntur and local mill traders rely more on them for good produce and price and trade happens at an aggregated scale. This year their activity has dropped since many were selling to CCI though they have emerged as an important link in cotton exchange.

5.6 Cotton Seed Cultivation

Seeds are undoubtedly one of the most important input for cotton cultivation and the supply chain of cotton seed production is intrinsically connected with that of commercial cotton. The seed that is derived from commercial cotton is used for seed oil production and does not flow back or re-enter the supply chain as feedstock for kapas. Cotton seeds earmarked for commercial cotton cultivation are produced separately through contract farming orchestrated by seed 'organisers', a set of independent informal agents who act as the functional link between the seed companies and farmers who remain invisible to each other. Private seed companies (both multinational and national, sometimes in partnership) account for the bulk of hybrid seeds grown in the country and operate through these crucial intermediaries since the take-off of hybrid seed production in 1990s. While the process of cotton seed farming has distinctly different dynamics, features and requirements, often farmers are found to partake in both cotton seed and commercial cotton cultivation. The fibre extracted from cotton seed farming joins the stream of commercial cotton. Thus, the supply chains of cotton seed and commercial cotton cultivation are not only conjoined but also overlapping, resulting in a multi-layered and non-linear network of agricultural production and trade.

Gadwal is the only district that cultivates cotton seed in Telangana and there are 14 seed companies operating here. However, the state has no record of the acreage, yield and particulars of seed farmers and the land under cotton seed cultivation is subsumed under that for commercial cotton production. The plots for cotton seed farming are essentially small, often in the tune of a couple of acres and the investment for per acre of cotton seed is much higher than for commercial cotton since seed cultivation demands higher intensity of inputs, irrigation and is an extremely labour intensive with additional activity of manual cross-pollination. A quintal of cotton seed is approximately ten times costlier than the same amount of commercial cotton. Cotton seed cultivation in the area was first initiated by farmers from the Andhra region after which the locals also picked it up. Child labour has been widespread in seed cultivation, mainly in cross-pollination activity but also in sowing and harvesting. Many current seed farmers have been erstwhile child labourers and though there are now much less children involved due to civil society action, the practise has not been altogether eradicated. It is present in the form of family labour rather than hired child labour.

The private seed company does not provide the foundation seeds (parent seeds) that are required for the production of hybrid seeds directly to the farmers but to the seed organisers. It enters into buy-back agreements with the organisers who get credit advances from the company and are commissioned to fulfil targets of seed production on behalf of the company. The organisers are usually connected with more than one seed company and assigned the task of identifying seed farmers, supplying them with parent seeds, collecting the produce after harvest and giving the seeds to the companies after ginning. Many organisers are big farmers in Gadwal and two such agents interviewed in the course of the fieldwork were collecting seeds from 200 and 500 farmers


5.21


5.22


5.23


5.24

Photos 5.21 to 5.24:
Processing of cotton seeds supplied to agri-business companies which brand and sell seed through input retailors 5.21: The workers at the mill labelling lot numbers to the seed bags of different farmers. 5.22: Workers mixing the seeds to extract a sample for lab testing. 5.23: A worker stitching the samples bags; 5.24: seed sample bags for testing in labs

respectively. They also give loans with a monthly interest of 2 per cent to the farmers for investment towards seed cultivation and also for everyday household expenses. They also offer suggestions on cultivation techniques, pesticides and fertilizers by visiting the fields. There is another layer of 'sub-organisers' between the farmers and the big seed organisers for more effective outreach and over time many sub-organisers graduate into organisers. These networks of intermediaries constitute an important institution in the cotton seed industry where these informal agents are the central players coordinating and managing the seed supply chain on behalf of the private companies.

The organisers give the parent seeds to the farmers in the months of May and June and after the harvest (between October and December), the produce is brought in the seed ginning mills. There are around 10 such mills in Gadwal which are leased in by the organisers to separate the seeds from the lint/fibre. The seeds are destined for germination and genetic purity testing by the companies which releases the money to the organisers provided the seeds pass the test and are certified to be marketed for the commercial cotton production. This process takes close to six months and the farmers are paid by the organisers (after deducting any money owed) once the test results are declared positive. The organiser does not stop charging the interest once the produce from the farmer reaches the organiser and the interest is added for all the months the seeds are held up in the testing laboratories. Farmers

BOX 5 A TENANT COTTON SEED FARMER

Jaipal Shanu belongs to SC category and is a Christian. Like him, almost the entire Dalit community in this village are Christians.

He is 35 years old. He and his wife are farmers and agricultural labourers. Their major source of income is from agricultural labour. Jaipal's capacity for work has decreased after he fell off a building during construction work and injured himself. So, most of the income comes through his wife's work; she works on groundnut, chilli and paddy fields. They do not have children.

Jaipal does not own any land. They have leased in one acre land for Rs. 35,000 from a Munnuru Kapu household who are major landholders in the village. The organiser from whom he takes the seeds also is a Kapu. Jaipal also owes him Rs. 80,000 which he had taken as loan this year. The land has a borewell. The first crop they cultivate is cotton seed and the second is paddy.

He has sown Sreerama 909 and Kaveri 219, both of which are conversion type seeds. The outcome this year is 6 ½ quintals of seed and 3 quintals of lint (which was sold for Rs. 9,300). The seeds are sent for testing. He says he never failed the test. Apart from this, 40kgs of commercial cotton was also produced from uncrossed cotton flowers which he sold at Rs. 46 per kg in Dharur market yard.

Jaipal says he has been using herbicide for 2 years on cotton seed crop and for 4 years on paddy crop. For cotton seed crop the herbicide is sprayed only once right after the sowing is done. He says this spraying should be done within a limit. Herbicide is widely available and used. He says it reduces the labour use by 50 per cent.

Jaipal has been working since he was 12. He did not go to school. His parents sent him to Kapus'(a dominant caste group) farms for crossing and emasculation work. In summer when there is no agricultural work he went to do masonry related work in construction. His father was a seasonal migrant always, he used to go for brick kiln related work in Hyderabad, Raichur and Kolapur. He took Jaipal along with him later on. They gave Rs. 7 for 1000 bricks they made. This was 20 years ago. They never had any land of their own. His father died a few years ago. Jaipal has been taking land on lease since the last 10 years and cultivating cotton seed. He says if he stopped cultivating the only choice he would have is to work on other's fields or to go to Hyderabad. It is because of the dam that the people have (agricultural) work in the village, without that the village would have been empty.

complain that even after receiving the payment from the seed company, the organisers do not inform them immediately and hold the money. In case the seeds fail the test, the entire lot is returned to the farmer without any payment or compensation.

From 2019, companies 'cut' the returned seeds to prevent malpractice since it was found that failed seeds were forwarded by the farmers to the organisers who sold them for commercial cotton cultivation. The lint (fibre) derived from ginning the produce of cotton seed fetches Rs.9000-9500 per quintal. It accounts for approximately 40 per cent of the cotton by weight, while the seed is 60 per cent. The organisers sell the fibre to traders and mill owners from Raichur and forward the money to the farmer. The farmers claim an overall lack of transparency since the organiser does not weigh the lint in their presence and decides the selling price with the trader without consulting the

BOX 6 A LABOURING FAMILY CULTIVATING COTTON SEED

Jagan is 37 years old, and belongs to Munnuru Kapu caste group falling under OBC category. He owns 1.5 acres of land, on half of which he cultivates cotton seed and the other half is used to cultivate paddy. The main source of irrigation is borewell and canal water. Though Jagan and his wife Kavitha are farmers, he says that their main source of income is through casual labour in agriculture. He says that only when the yield is really good they are able to earn any money; otherwise, the family is totally dependent on agricultural labour. His mother is 65 years old and goes for agricultural work on others' fields. The two women have ample agricultural work available in the village and it is the main source of income. Jagan and Kavitha have three children studying in 11th, 9th and 5th classes. They often help the parents in crossing and emasculation work.

Jagan said it is because of Nettempadu and Ralempadu dams that they are cultivating two crops (Paddy and cotton seed) for three years now. Farmers from Andhra region started cultivating cotton seed in their village in mid 1980s. They have also taken it up slowly since 1990s. When he was young his parents were migrants to places like Bombay and other cities to work in construction sector. They owned land in the past too, but there was no water to cultivate anything. Sorghom, he says, used to be the main crop, before cultivation of cotton seed became more prominent.

Talking about literacy in the village, he says that in their village there is literacy to some extent in the Munnuru Kapu community which is the dominant caste in the village. The other caste groups such as SCs and OBCs are mostly non-literate and the situation has not improved in the current generation. Children are encouraged to work in fields for crossing and emasculation. There is not much emphasis on education in this region.

Jagan's current year debt with the Organiser is Rs. 1,50,000. He said, "The money from the income from sold produce (seeds) is deducted as part of debt and the remaining is paid to us. Sometimes we are paid nothing as all the money goes in debt". He emphasises on the need to increase the price of the seeds they produce. He said, "Labour costs are high, per day wage for a person is Rs. 500 whereas the packet of kilo seed is sold at Rs. 410."

The labour is mostly migrants from Andhra and Karnataka regions who stay put with the farmers till the crossing and emasculation are done. Their shelter, food (including weekly non-veg), soaps and oils are be provided by the farmers.

farmer. The seed organisers report that the CCI is not interested in this fibre due to its shorter staple length (compared to that from commercial cotton). Also, CCI does not buy only the fibre; it purchases the kapas (seed and lint) and then gins it.

The contracts are drawn up between the company and the organisers and incorporate the terms and conditions of the agreement like the organisers' commission, production targets and procurement prices due to the farmers. Due to pressure from activists and farmers' organizations, the district collector ordered the state agriculture department to keep the agreements but the officials reported that the apart from a few, agreements were not submitted by the companies. There are no agreements between the companies and the farmers and no written contracts between the organisers and the farmers. All India Kisan Sabha

and other activist groups have been demanding more transparency, better prices and a need for an agreement be made between the companies and the farmers rather than organisers and companies. In a meeting of the collector with the organisers (as representatives of the companies) in October 2019, the collector proposed an increase in the price for the produce and direct agreements of farmers with the companies. When enquired, an organiser said that there will be agreements between the farmer and the organiser from next year but there will not be any direct agreement between the farmers and the companies. The regulatory role of the state is largely absent in cotton seed industry apart from fixing the seed prices which the companies claim creates an obstacle in increasing the farmer's share and undertaking research and development activities.

5.7 Key Players and Inter-linkages in the Cotton Supply Chain

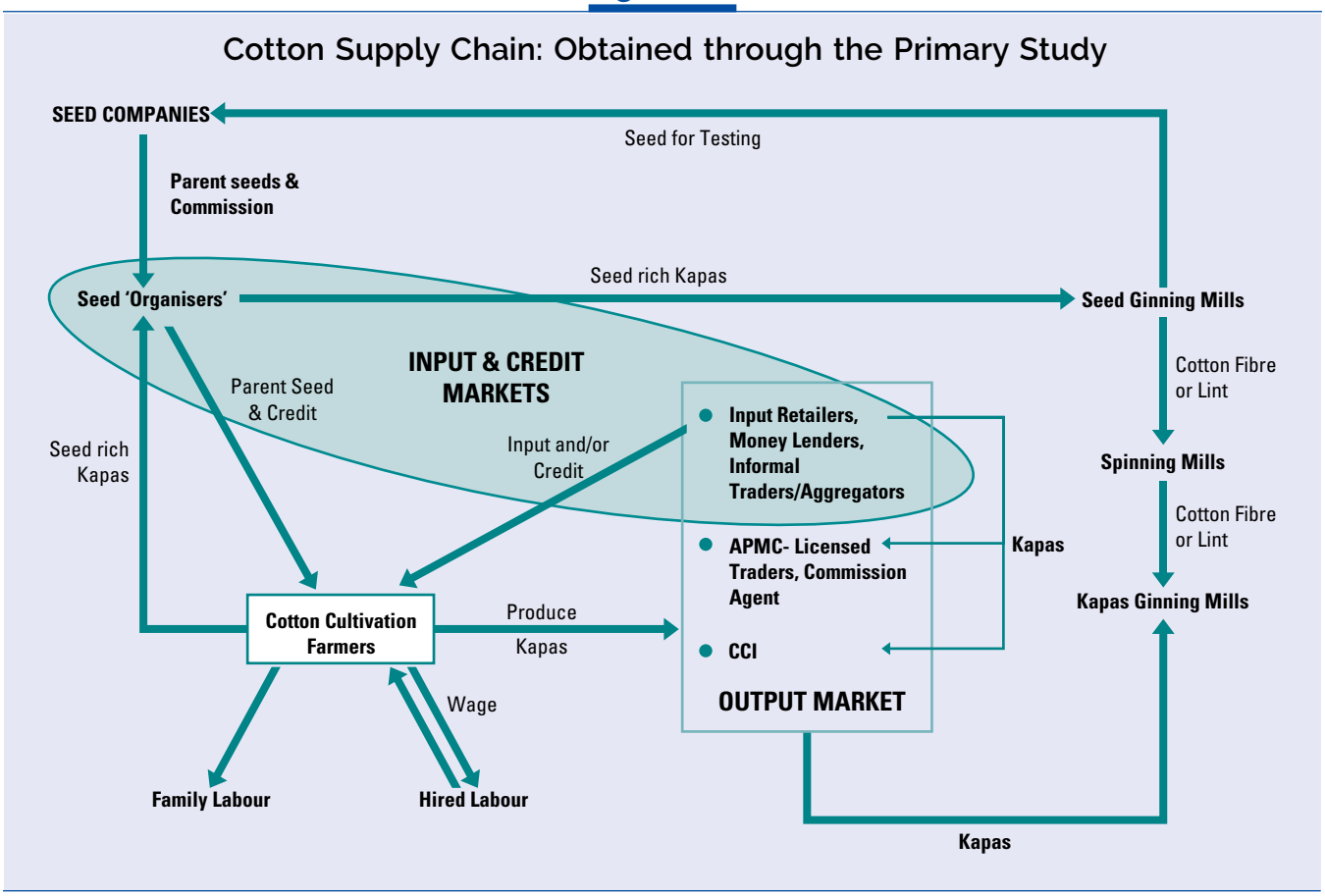
In this section, we schematically represent and explain the portion of the cotton supply that is the focus of this study. It expands the segment that has been highlighted in Figure 5.1 to elucidate the complex ecosystem of diverse actors and their operations that start from the sourcing of inputs for cotton cultivation to the sale of the produce in the output market. It maps the channels of movement of physical material and value distribution that are linked to the production of kapas. It locates the cotton growing communities at the centre of this upstream section of the supply chain and highlights the inter-relationships between different stakeholders involved in the chain. Figure 5.2 condenses the elaborate network of the key players (both institutional and non-institutional) and offers a consolidated visual depiction of this non-linear and multi-dimensional system. It is a simplified version and a few inter-connections are not shown but discussed for easy comprehension.

The cotton farmers are principal actors that occupy the critical node of production which yields kapas from a variety of farm inputs. There are also cotton seed farmers who might also produce commercial cotton and in this diagram, all these players are subsumed under the category of cotton cultivation farmers (highlighted in yellow). Farmers operate on landholdings of various sizes and use family labour and hired/wage labour as inputs into production as discussed earlier in this report. The processes of input procurement and the relations between input suppliers and cotton cultivators have been elaborated in chapter 3.

Figure 5.2 portrays the key players in addition to the cotton growing communities and the diverse inter-linkages (denoted by arrows) between them. Moreover, it emphasises the major nodes of the network and the sites of production and exchange. It also highlights the avenues and mechanisms through which various commodities are traded, focussing on the output market for the kapas. Seed rich kapas is differentiated from kapas as the former is earmarked for cotton seed production but the fibre obtained from this also joins the stream of commercial cotton. Kapas which is referred to as commercial cotton in the local parlance refers to cotton lint/fibre and seed. Overall, the diagram illustrates the constellation of actors in the organization of the cotton supply chain up to the sale of the produce for ginning. The primary focus of this study is on commercial cotton production and marketing of the output commodity. Cotton seed is also incorporated in the figure due to its continuity with the commercial cotton network and overlapping actors.

Along with seeds, pesticides and fertilisers, production also requires credit and information regarding appropriate methods of cultivation. These are sourced from input retailers and money-lenders and often input retailers can also double as creditors by extending loans to the farmers.

Figure 5.2



The input suppliers (sometimes performing this dual function) and informal money-lenders also buy the produce from the farmers which is a pre-condition of loan settlement. They finally sell it to the CCI or licensed private traders (registered with the APMC) and are intermediate actors who connect farmers to the output market. Farmers also sell their produce to another group of intermediaries who are informal traders and aggregators. The latter profit from the price differential between the purchase price they pay the farmers and the selling price they receive at the output market. The commission agents authorised by the state APMC assist the farmers in selling their kapas to licensed private traders. They frequently provide the cultivators with much-needed loans and charge a commission from the latter. This shows that the flow of material and finance in the network are neither linear nor unidirectional.

The private traders who are authorised by the APMC and the commission agents are vital actors who fall within the regulatory ambit of the state. There is a universe of key informal players like the input suppliers, informal traders/aggregators, money-lenders who are crucial to the functioning of the cotton supply chain. Kapas also flows from these players to the CCI and APMC licensed traders. CCI buys cotton from the farmers (sometimes through intermediaries) at the MSP in market yards or ginning mills notified as procurement centres. It is the primary institutional player that provides a threshold competition to private traders in the output

market. The other institutional body is the APMC which regulates produce market transactions and provides oversight in market yards. The produce kapas acquired from the farmers (directly or via intermediaries) goes through the process of ginning which separates seed and lint (the cotton fibre). In the same ginning mills, cotton fibre is compressed and packaged into lint bales, essentially for reduced storage space and easier and cheaper transportation. Traders channelise these bales of cotton to the spinning mills or directly to international markets. Ginning millers also perform dual roles as licensed traders – they receive rent for ginning and processing lint bales from CCI and other traders, besides trading and processing cotton themselves. Some of them also consolidate their cotton trade by lending inputs and credit to farmers.

The seed thus obtained does not serve as an input in cotton cultivation and is used for seed oil production. The seed designated for cotton production is separately cultivated and extracted from seed rich kapas. As already discussed, seed organisers enter into a buy-back arrangement with seed companies and provide parent seeds to farmers. The farmers also borrow money from seed organisers and are tied in informal credit relations with these organisers who buy their produce which is seed rich kapas. The seed organisers take this from the cotton seed producers to seed ginning mills which are leased in by the organisers. The lint that is removed from seed rich kapas is of high quality and is sold for ginning and thereby enters the stream of commercial cotton. The seed goes through the seed intermediaries to the originally (informally) contracted agro-seed companies for testing and branding, and thus enters the retail input circuit.

The oval zone marked in the diagram represents the input and credit market while the rectangular box combines the major players in the output market. Inputs and non-institutional credit reach the farmers through a host of informal agents like seed organisers, input suppliers and money- lenders. Commission agents can also offer loans to farmers but that linkage is dropped from the figure for simplicity. Informal traders and aggregators are not sources of input or credit for the farmers but important buyers of the produce who eventually take it to the market for sale. This illustration, the overlap between the oval shaped input markets and the rectangular output market, exhibits how the input-credit-output markets are interlocked in the cotton supply chain where one group of actors perform more than one function in more than one market. The arrow from spinning mills at the extreme right leads to the remaining supply chain which is omitted here. There are additional players involved in the network like other intermediaries and labour engaged in transportation and some non-chain actors like the non-governmental organizations who are not included here. As discussed earlier, the latter influence the constitution of the chain through advocacy regarding child labour, farmers' rights and Farmer Producer Organizations (FPOs) who protect farmers' interests.

5.8 Choices and Constraints of Farmers

The farmers are faced with various considerations and constraints and accordingly has to decide on when, where and how to sell the different pickings of cotton. They need to repay the loan and satisfy the demands of the creditors, ensure credit and input availability for the following agricultural year, diversify their risks of selling, factor in the storage and transportation costs, pay the wages of the hired labour and also meet any immediate and urgent need of cash flow. Correspondingly, they deliberate on varied methods of selling to official or informal buyers and can adopt a range of strategies which include

Photos 5.25 to 5.27:
Lack of storage space is a major constraint for farmers to withhold the produce. High moisture causes significant amount of cotton to rot for lack of facilities to dry and store cotton.

a. Storing cotton at their homes, to sell at the later date. This may be due to a variety of reasons such as when volume harvested is very low for selling, waiting for next round of picking, postponing sale with an expectation that market prices will increase and drying the cotton to reduce the moisture content. However, prolonged storage can compromise the quality of the cotton reducing its price.

b. Sell immediately because they depend on the returns from cotton sale for household expenditure and emergencies and payment of wages and other dues.

c. Sell partially and store part of the produce to sell at a later date.

d. Sell part of the produce to the private trader (officially notified at the market or informal agents at villages) and some part to state agency i.e. the CCI at the market yard or notified ginning mills.

e. Sell wholly to the CCI if the Minimum Support Price or MSP is higher than the market price.

The farmers' decisions also vary according to the picking of cotton and there are at least three pickings of cotton which might also go up to five.

The time of pickings is different across districts and even within districts though a broad pattern can be discerned for one district according to which the District Collector plans the APMC operations at the market yards. The cotton produce varies by yield, quality and quantity across the various pickings and are brought to the market over an extended period of six-seven months.

As outlined above, all the cotton does not reach the market yards and ginning mills directly from the grower who sells to traders and/or uses the kapas to settle the credit with the input retailers and money lenders. The farmers often do not sell their produce immediately and if the quantity from the first picking is too little then they would wait for the subsequent pickings; mostly the second and third picking of cotton are the major ones. Then the produce would be stored till a substantial quantity have been accumulated for sale. However, if the cultivators are in need of cash, they would even sell the small amounts of kapas to different intermediaries rather than store and spend on transportation for taking the produce to the market. Big farmers keep the produce for longer than the usual storage period after concluding the different rounds of pickings and then sell to benefit from favourable market prices.

The price that the cultivators get for the produce is contingent on the quality of the cotton and the buyer and they ascertain the time and quantity of sale accordingly. Many farmers would themselves divide up their produce from each picking into batches of superior and inferior quality and reserve the former for sale to the CCI. They would also sun-dry the moist cotton and then try to sell to CCI if they can afford to wait. This year, the CCI started procuring from mid-November citing the low quality of cotton (i.e. high moisture content) gathered at the initial stages due to delayed rains. So, when the first pickings were sold, the CCI has not arrived in

Table 5.6

Price and Transparency among Different Modes of Selling Cotton (in%)

Household categories based on Operational holdings	Through Commission Agent in market yard	To trader or owner of ginning mill at the mill	To trader at ginning mill (not the owner)	To trader in village (at home or field)	To trader outside the village	CCI procure-ment	Other	Total
Marginal	42.9	7.1	14.3	7.1	14.3	57.1	0.0	100.0
Small	48.0	18.0	10.0	14.0	12.0	56.0	4.0	100.0
Semi-medium	35.3	5.9	0.0	23.5	5.9	67.6	8.8	100.0
Medium	39.1	4.3	4.3	26.1	8.7	65.2	4.3	100.0
Large	0.0	0.0	0.0	0.0	0.0	100.0	0.0	100.0
Districts								
Adilabad	41.9	6.5	0.0	22.6	0.0	67.7	3.2	100.0
Gadwal	44.8	31.0	27.6	31.0	41.4	31.0	6.9	100.0
Nalgonda	0.0	0.0	0.0	6.3	0.0	90.6	9.4	100.0
Warangal - Rural	80.6	6.5	0.0	12.9	0.0	54.8	0.0	100.0
Total	41.5	10.6	6.5	17.9	9.8	61.8	4.9	100.0

Source: Primary household survey (December 2019 & January 2020)

Table 5.7

Most Convenient Mode of Selling Cotton Produce

Household categories based on Operational holdings	Through Commission Agent in market yard	To trader or owner of ginning mill at the mill	To trader at a ginning mill (not the owner)	To trader in the village (at home or field)	To a trader outside the village	CCI procure-ment	Other	Total
Marginal	42.9	7.1	14.3	7.1	14.3	35.7	14.3	100.0
Small	51.1	12.8	10.6	23.4	17.0	40.4	8.5	100.0
Semi-medium	37.1	8.6	0.0	37.1	5.7	48.6	8.6	100.0
Medium	47.6	9.5	9.5	38.1	9.5	47.6	4.8	100.0
Large	50.0	0.0	0.0	0.0	0.0	50.0	0.0	100.0
Districts								
Adilabad	51.9	7.4	3.7	29.6	0.0	59.3	3.7	100.0
Gadwal	44.8	24.1	27.6	34.5	48.3	13.8	3.4	100.0
Nalgonda	3.1	3.1	0.0	31.3	0.0	59.4	25.0	100.0
Warangal - Rural	83.9	6.5	0.0	16.1	0.0	41.9	0.0	100.0
Total	45.4	10.1	7.6	27.7	11.8	43.7	8.4	100.0

Source: Primary household survey (December 2019 & January 2020)

the market. The farmers were unable to wait and sold off their produce to the intermediaries (also to fulfil the loan repayment condition) and other aggregators.

Mostly, cotton from the first and second picking are destined to the creditors and after clearing the debt, the farmer sells the cotton wherever they get good price. Till CCI became active in the market, some farmers have sold the initial pickings to the input retailers at prices as low as Rs.3500 per quintal, as reported by farmers in Nalgonda district. Since in this season, there is a big difference between the MSP and the market price, the farmers are trying to sell to CCI and then repay the loan of the informal creditors with the cash rather than sell the cotton itself for debt servicing. Since the money-lenders, input retailers or other creditors know that they cannot match the procurement rates offered by the CCI (Rs.5500 per quintal), by mutual understanding they might allow the farmers to sell to CCI. In Gadwal, cotton selling to input creditors was less widespread and the farmers directly went to Raichur or sold to brokers who came to the villages.

As demonstrated in Table 5.6 and Table 5.7, the farmers rank the different avenues of selling their produce by price transparency and convenience. Overall, cotton growers, irrespective of the size of their cultivable land considered CCI procurement as most transparent medium of purchase with the best monetary returns followed by commission agent which is a distant second. However, district wise disaggregation shows that in Warangal, households had more faith in the commission agent than the CCI and in Gadwal, there are no strong preference between the various agents. In Nalgonda, farmers overwhelmingly voted in favour of CCI in terms of fair pricing and transparent procurement. Here the commission agents were seen as exploitative profit seeking middlemen and in nexus with the traders. Auctions were not monitored properly

by the APMC officials and farmers complained that the agents manipulated the weighing, did not follow any standard parameters for quality determination and arbitrarily fixed prices.

At the aggregate level, selling to CCI and through commission agents were considered as most convenient. Variations across the four districts show that in Gadwal, rather than the CCI, the farmers preferred the traders from outside the village in addition to the commission agent. In Nalgonda, the two chosen modes of selling in terms of convenience was the CCI and the trader in the village who collects the produce directly from the home/field.

5.9 Issues and Challenges of the Farmers

While overall the farmers have good impression of the CCI, many did not or could not benefit from the state procurement mechanism. As shown earlier in this chapter, almost three-fourth of the farmers did not sell to CCI. However, during the field research, the later pickings of cotton were not harvested or not yet sold and many farmers wanted to sell the kapas to CCI, after paying off the loan to creditors. This would effectively increase the proportion of growers availing state procurement channels in the agricultural season which was still ongoing after the completion of the field research. This section discusses the obstacles faced by farmers in selling to CCI and the rationale of selling to others despite the CCI paying higher prices and about other challenges of farmers.

The documents demanded by CCI from the farmers are sometimes hard to arrange and often there is discrepancy between details (such as misspelt names) in land documents, cotton cards, Aadhar card and bank passbooks. Frequently, farmers' details are incorrectly entered in the database especially in case of land size and ownership. In such instances, payment to the farmer is withheld and the farmer has to go the CCI regional offices to enquire about the status of the payment. Then the farmer has to approach the concerned office to make necessary changes in the documents. If the farmer's details and information are correct and uniform across all the documents, then the CCI transfers money to the farmers' bank account but only after a fortnight. Since the farmers are mostly dependent on immediate cash flow and liquidity, they want to get paid on the same day as they do when selling to private traders through the commission agent. Though a higher per cent of commission has to be paid to the agent for instant payment, the concern for liquidity often becomes the overriding factor against the money forgone due to this extra commission. Sale of cotton and receipts from sale are not concurrent in case of selling to CCI and for the farmer/producer the sale is only complete when the money is released and reaches the farmer and not merely at the time of the sale. In Gadwal district, CCI has started operating since the last 5 years. Due to the prolonged delays associated with CCI payment, many growers preferred to sell to Raichur (though commission agents) in Karnataka where payment is instantaneous despite the higher rates of state procurement by CCI.

It was reported that some farmers only received partial payments into their accounts from the CCI, and they were forced to go to the CCI office to update passbook entries and bank account statement and apply for the release of full payment. There are also problems with the bank accounts of the farmers since many farmers' bank accounts get suspended when there is no transaction for six consecutive months. Then the money from the CCI is not credited to the farmers' accounts. So, the farmer is compelled to visit the bank, activate the account and accordingly inform the CCI about the changed account status. Additionally, many farmers have Basic Savings

Bank Deposit Accounts (*Jan Dhan* Account) which have limits imposed on the amount of transaction allowed. The payment to be made for the cotton sale is higher than the amount that can be deposited into the Basic Savings account. This was found to be a major problem. It forced the farmer to visit the bank and change the account type from Basic Savings Deposit account to Normal Savings account which allows for higher value transactions. Then they need to pass this information to CCI again such that CCI can process the payment.

The state procurement takes a long time and the farmers have to wait very long to sell to the CCI. Farmers with loads of cotton keep awaiting their turn to sell the cotton due to long queues and has to go through several steps before their produce can be procured by CCI. They need to get their documents verified stating how much cotton they will be allowed to sell after which the cotton is tested for the amount of moisture. There is always a risk of the cotton getting rejected and the farmers are never sure whether the quality of their produce will meet the strict quality standards of the CCI. Getting their produce tested can take hours and only after approved by the CCI, it is weighed. For the purpose of accuracy, the loaded vehicle and emptied vehicle must be weighed on the same weighing bridge in the market yard. Only after weighing all the vehicles with cotton, the emptied vehicles would be allowed on the weighbridge. It sometimes takes 2-3 days before the farmer gets a final receipt of his/her sell. The Adilabad market was found to be open and crowded with farmers till midnight on most days of the field visit and vehicles full of cotton started arriving from as early as 4 am. In Indravalli APMC where two ginning mills has been earmarked as CCI purchasing centres, series of vehicles were found waiting for their turn to unload. In all the three mills in the Gadwal district which the CCI has leased in for kapas procurement, farmers were also waiting for 3 days to sell their produce. One farmer in Nalgonda district pointed out that nearly half of his produce was rejected citing high moisture content after waiting for more than 2 days. He complained that prolonged waiting time affects the quality of the cotton which might start rotting when kept stuffed for days.

According to another cultivator, CCI should let the farmer know whether the cotton passes the quality parameters by making quick tests so that the farmer can move on to other private buyers if CCI is not interested in his/her produce. The cost of waiting becomes high for the farmers which they cannot afford as they have to keep paying the rented tractors and hired drivers. And this is without the guarantee that they will be able to sell to the CCI. At least the traders and aggregators buy directly from their villages and the farmers are saved from this uncertainty and logistical costs and challenges. So, it could be ideal if CCI could purchase it from every village according to the farmer in question.

There can also be substantial delays in procurement due to processing capacity, personnel strength and infrastructure of ginning mills which are the CCI procurement centres. Only after processing (separating seeds from fibre), the cotton fibre can be put in bales and the volume will be reduced. Unless the first lot is processed by the mills, the second lot cannot be bought. In Nalgonda, there were problems with the ginning machines which got over-heated due to pressure of heavy incoming loads of cotton. Often the operational scale and capacity of the mills are not adequate to deal with the volume arriving and there is also a lack of physical space to accommodate all the cotton. In a mill in Nalgonda district, farmers were stranded at the mills when procurement was stalled for two days. The CPO from CCI explained that both cotton seeds and bales have not been sold for a few days because

of the low market price. The seeds have piled up and the bales are still stacked in the mill which has crowded the entire floor space available.

There are often never-ending queues of farmers waiting for days with their tractors and small trucks found in front of the mills acting as procurement centres. In Devarakonda in Nalgonda district, farmers grouped near a mill said that they have come from many far-off places like Dindi, Munugodu, Kamapally and have not been able to sell any cotton since the last 3 days. They complained that the mill authorities are often partial when it comes to allowing particular vehicles inside and few lorries that arrived only last night were sent inside right in the morning. They said that the mill owners have links with the intermediaries selling cotton and play favourites. Farmers cannot also demand or question the millers and they are not even allowed inside the mill beyond a particular point. They said that the government is turning a blind eye to this problem and opined that there should be a token system. APMC had introduced tokens to the farmers in the month of December 2019 which clearly states the date of arrival in the mill along with a serial number but that does not seem to be completely effective as revealed in this case.

A few women farmers were found carrying all their passbooks, identity cards and other documents such that the CCI can verify them as the original producers of cotton. Hence, it was mandatory for them to stay there till the registration with and the scrutiny by the CCI is finished. They have been waiting for 2 days and they needed to go back home soon since their families were waiting. Some farmers also protested in front of a mills in Nalgonda district demanding fair trade since their produce was rejected after days of waiting and police had to be called in. Small farmers consider it risky to go all the way to CCI with the high labour and transportation costs as they dread long queues at the market centres and fear rejection of their produce. They find it amounts to the same, "either CCI or here in the village." For marginal farmers, the produce from one picking might be too little to carry it all the way for selling to the CCI. Hence, they find it economically more viable to sell small quantities at the village as the extra they would earn from the higher MSP would be eaten up by logistical expenses.

The farmers are often tied into an exploitative relationship with the input retailers, money-lender and other informal intermediaries since they rely on them for finance, information and market linkages. Especially, for small and marginal farmers, they are singularly important to facilitate the sale of the cotton and would often be the only source of credit due to inadequate access to formal credit. It was observed that many farmers sought permission from their commission agents before selling to the CCI and also inform and consult the money-lenders to judge the best time to sell cotton to CCI. It is also in the interest of the money-lenders since they are keen to get back the money loaned to the farmer. They exercise a high degree of control over the farmers and advise them on how, when and where to sell their produce.

Table 5.8 shows that almost 30 per cent of the farmer households found delay in payment as the most important obstacle in accessing the benefits of MSP. In Gadwal, delay in the procurement process and in Warangal, documentation issues impeded farmers substantially in this regard. The bulk of the farmer households in Nalgonda cited 'other' as the reason which includes tie up with creditors where the cultivators are bound to sell their produce to input suppliers and/or informal money-lenders. This is also reflected in Table 5.2 where more than 85 per cent of the farmers in Nalgonda are obligated to sell to these intermediaries as a condition of their

Table 5.8

Reasons for not Selling to CCI

Household categories based on Operational holdings	Docu-mentation Problem	High moisture content	Quality issues	Procurement centre not open when produce was ready	Delay in procurement process	Delay in payment	Sold at higher than MSP price to private traders	Unaware of CCI procurement	Other	Total
Marginal	11.1	0.0	11.1	0.0	0.0	22.2	0.0	0.0	66.7	100.0
Small	16.7	12.5	16.7	8.3	12.5	29.2	0.0	4.2	45.8	100.0
Semi-medium	10.0	25.0	20.0	0.0	25.0	35.0	0.0	0.0	45.0	100.0
Medium	0.0	0.0	14.3	14.3	28.6	14.3	14.3	14.3	57.1	100.0
Large	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Districts										
Adilabad	14.3	28.6	0.0	14.3	14.3	28.6	0.0	14.3	28.6	100.0
Gadwal	0.0	12.5	18.8	6.3	43.8	37.5	0.0	6.3	56.3	100.0
Nalgonda	0.0	5.0	5.0	0.0	10.0	5.0	0.0	0.0	85.0	100.0
Warangal - Rural	35.3	17.6	35.3	5.9	0.0	47.1	5.9	0.0	11.8	100.0
Total	11.7	13.3	16.7	5.0	16.7	28.3	1.7	3.3	50.0	100.0

Source: Primary household survey (December 2019 & January 2020)

loan repayment. Across districts, some farmers continued to sell to the creditors even after clearing the debts due to high transportation costs for taking the produce to the market and long waiting period.

In the case of one farmer in Adilabad, the money lender was keeping track of all his transactions at the farm as well as the market yard. Representative of the money lender accompanied the farmer to the market and 'helped' him with the process of documentation during the sale. He collected all the information such as price and the proceeds from the final sale and took the bank passbook and the transaction receipt given by the CCI. Once the money from the CCI is credited into farmer's bank account, the money-lender would draw his money towards his loan amount and only then return the passbook to the farmer. The cultivators complain that the dealers and other private purchasers take advantage of their situation. They manipulate the weighing process and make unreasonable deductions from the weight of cotton, consequently cheating the farmers. Many farmers could not show the receipts of the purchases of inputs and most did not have a habit of maintaining an account of credit. Even when they did, most of them struggled to understand the calculation but were unable to confront their respective dealers regarding unfair conditions of debt resettlement.

Conclusion

A detailed mapping of the cotton supply chain with the farmers as the central node manifests the intersecting and overlapping markets of input, produce and credit that characterise this sector. The multi-faceted forward and backward linkages in cotton production and marketing are obscured by the existence of a range of intermediaries who dominate the avenues of material exchange. As demonstrated in this chapter, these informal creditors, input-suppliers, traders, aggregators

play multiple roles and often tie the cultivators in exploitative relationships of dependency by providing production capital and rotating credit. They can squeeze the share of the farmers whose bargaining power is often low compared to these intermediaries. However, they are also critical players who ensure the progression of the cotton produce along the network and channelize it to the market. Inter-locking of markets is only one feature of the cotton supply chain at the upstream stage.

The discussion in this chapter has demonstrated how the farmers are integrated in the cotton supply chain in the local markets. The demand and subsequent price of the produce in local transactions is impacted by the fluctuations in the global cotton commodity market. We are focussing on how the cotton growing communities are affected by this larger patterns of demand, both international as well as domestic. Downward trend in the global price of cotton suppresses the export price of Indian cotton which is necessary to stay competitive at the international market. This influences the margins of the local actors in the cotton supply chain and if required the state moves in to protect the farmers' share. Thus, it is evident that the global demand and supply affects local prices in the output market and determines whether the state will intervene by procuring cotton at MSP. The role of the state (CCI as the nodal agency) in this agricultural season has allowed an investigation of such market dynamics. This chapter has also shown the existence of a parallel and overlapping market for low quality cotton which is purchased (at less than MSP) by private actors for both national and international consumers. It reveals how the cotton cultivators are affected by the vacillations in the demand and supply embedded in the global supply chain of cotton.

This chapter highlights the central players in the cotton network that exercise substantial control over the processes of cultivation, marketing, even permeating into state procurement channels. It explores the spatial dynamics and socio-economic transactions between these key actors and investigates the impact on the outcomes of cotton farming on the cultivators. Their survival and conditions of socio-economic reproduction are often under adverse circumstances and affected by low returns on their produce that in extreme cases perpetuate cycles of indebtedness. The state's initiatives and policies to provide fair price for their produce and safeguard them from vagaries of the market are sometimes unable to reach the intended beneficiaries due to the infrastructural and logistical challenges in accessing the MSP in a deeply entrenched institution of intermediation.

Chapter 6

KEY FINDINGS AND POLICY SUGGESTIONS

Cotton Production in Telangana

Cotton production has drastically increased in Telangana during the last two decades, after the phase of severe distress suffered by cotton farmers evident in the late 1990s. Broadly, a host of factors seem to have contributed to the growth of cotton: i). the initial successes in pest control by the introduction of GM technology through Bt cotton seed; ii). better market prices due to rising demand (domestic and export) for cotton in comparison with other dryland crops; iii). improvements in state support in terms of credit especially since 2005-06, increases in support price, especially remarkable hikes on three occasions between 2008-09 and 2018-19, and improvements in procurement by state agency; and iv). a lack of remunerative crop-options under rainfed conditions in the larger context of aspirational-cultural change, which manifested in a shift away from non-remunerative traditional crops like jowar and castor which proved inadequate in meeting the demands of social consumption needs.

State government's agricultural investment support (Rs. 8000 per acre of owned land per year) scheme Rythu Bandu and the substantial hike in MSP of cotton in the year 2018-19 seem to have further contributed to the increasing adoption of cotton cultivation by farmers in Telangana in the last couple of years.

Within Telangana, only a few districts were in the forefront in cotton cultivation in the 1990s and early 2000s. But by 2012-13, most of the districts have adopted cotton as a major crop barring the Nizamabad district. Among the erstwhile districts, Adilabad and Warangal led cotton production, followed by a second group of four districts, viz. Nalgonda, Khammam, Karimnagar and Mahabubnagar, in terms of area of cultivation. However, the recent trends are significantly diverging, with differences between the more backward districts compared to better irrigated and better-off districts since 2012-13. The districts of Nalgonda and Mahabubnagar continued to expand area under cotton while Warangal, Khammam, Karimnagar witnessed a fall in the area. The shifts in the recent years put Nalgonda and Mahabubnagar among the four major cotton growing districts, alongside Adilabad and Warangal. The latest trends suggest that currently the cotton production is expanding in areas where the extent of unirrigated land is high.

Nature of Cotton Producers

The state has witnessed increasing fragmentation of land, and agriculture is predominantly characterized by small-scale farming, which was well recognized in the recent decades. However, the average landholding in this region in particular, and in arid and semi-arid regions in general, was historically higher than the high rainfall and better irrigated areas. Against this agro-ecological and historical context, Telangana now surprisingly has even lower share of medium and large holdings compared to all India scenario. This is a significant development in the last two decades which suggests two plausible processes: one, marginalization of operational holdings through increasing small-scale leasing-in of land from the medium and large owners of land, which means higher fragmentation of operational holdings than that of ownership holdings; and/or, two, a higher pace of fragmentation of ownership as well as operational holdings than other parts of the country.

Given this structure of small-scale agricultural operation in general, do cotton farmers represent similar structure or scale-up operation? In other words, how big or small are cotton farmers in Telangana? The most marginal farmers (the households with marginal operational holdings)

represent lower level of engagement in cotton cultivation relative to their overall proportion among all categories of farmers. This pattern partly reflects the capital-intensive nature of cotton, wherein not all the small and marginal households can manage to mobilize financial resources to produce cotton. However, in absolute numbers, small farmers predominate cotton cultivation followed by semi-medium, medium, marginal and large farmers. More than two-thirds of the cotton cultivating households own either marginal and small holdings of land or no land. In terms of land cultivated, more than half of the cotton farming households operate small and marginal holdings of land. In other words, half of the families engaged in cotton cultivation are very small-scale producers. Among the districts, Adilabad has a considerably higher share of bigger farmers (operating semi-medium and medium land holdings) in cotton cultivation than in other districts. Other districts exhibit predominance of small and marginal cotton cultivators.

In contrast, cotton seed cultivation has even higher proportion of small and marginal holding households compared to normal cotton cultivation owing to the intensity of labour which is much higher in cotton seed production. Labouring households are drawn into seed cotton cultivation, which is also evident in the considerable number of landless households leasing in marginal holdings to cultivate seed cotton.

Small-Scale Cotton Farming and Family Labour

The most pertinent feature of the nature of cotton farming households in Telangana is the magnitude of household labour. Household or family labour constitutes a significant part of human labour engaged in cotton cultivation. Women members in nearly 90 per cent of cotton farming households continuously engage in manual farm activity.

Women in some of the remaining households also engage either in particular activities or occasionally. Similarly, but at slightly lower level, men in 80 per cent of the cotton farm households engage in farm work continuously, and except a few, the remaining ones engage in particular activities.

Equally importantly, household labour outweighs hired labour among majority of the cotton farmers when assessed in overall person days engaged in their respective farms. Family labour comprises at least 50 per cent or more of the total labour engaged in cotton farms among more

than half of the households. Members in about 30 per cent of the households contribute between 25 to 50 per cent of the total farm work. In fact, our qualitative observations suggest that family members work very long hours, from morning till the evening. Further, members in more than half of the households hire out to work on others' farms; their share is much higher among the marginal and small households. Another feature prevalent is mutual exchange of labour, especially of women, which households with larger holdings also engage in. Women in more than half of the households engage in exchange of labour. These attributes are significant indicators of the nature of most of the cotton producers in the region, which is marked by self-exploitation, besides the exploitation of hired labour.

About 30 per cent of the cotton farming households derive significant part of their income from engaging in casual wage work. Though the average scale or size of cotton farm is just over one hectare, even the marginal landholders have to hire labour for certain activities. The share of hired labour relative to household labour increases with the size of the farm. However, the prevalent agrarian structure or structure of the scale of farms reduces the distance between the class positions of hired labour and self-employed farmer, unlike, for example, a plantation worker and the estate owner.

Gender and Cotton Production

Cotton farming, like agriculture in general, is highly feminized in this region in terms of both household and hired labour and large share of work is performed by women. Yet, specific activities in cotton cultivation are gendered; most activities are performed predominantly, if not exclusively, by either male or female gender, and some activities are exclusively gender specific (discussed in the chapter 4). There had been a significant extent of de-masculinisation of labour with mechanization of bullock-drawn ploughing which was exclusively handled by men. Except at the time of sowing and weeding, most of the bullock drawn ploughing is replaced by tractors (either hired or own). Though ploughing through tractors is also performed by men, this mechanization has displaced/substituted many men. Women engage continuously in major activities on the field such as sowing, manual weeding and picking of cotton. Men take part in some of these activities, with different roles within activities such as sowing and spraying of pesticides. While women play a significant role in decision making at the farm level and are well informed about cropping activities and crop issues, men are the ones who almost exclusively engage in market transactions. The cotton supply chain beyond the farm is highly masculinised, where most of the actors in the supply chain such as input retailers, money lenders, commission agents and traders of all levels are men.

Land ownership pattern within households engaged in cotton cultivation reveals that majority of the land is owned by men in the families. Though households rather than individuals function as socio-economic units, ownership of land and its control rests mostly with men. However, consideration of female household labour and other factors do influence the choice of land use including the type of crop cultivated. Women in majority of the households do not have ownership rights in household land. Women in just above one-third of cotton-producing households possessed land titles to either part or whole of the total land holding. This is broadly in line with the patriarchal norms of the society where ownership rights in land and other property still follow patrilineal inheritance.

Tenancy and Cotton Farming

Incidence of tenancy in cotton farming is significantly high - about one-third of cotton growing households leased-in land. There is a tendency among some cotton farmers of increasing the scale of operation by leasing-in land, evident in the number of households that leased-in land, and its prevalence across households irrespective of the size of agricultural land they own. Landless households too engage in cotton cultivation by leasing in land. Tenancy incidence is more among the marginal and small holding households. The predominant form in terms of rent is fixed-rent tenancy, wherein rent per unit of land is fixed irrespective of the produce, which is paid in cash and mostly in advance before the cultivation begins.

Thus, the component of paid-out cost for rent on land increases the cost of production among the households operating leased-in land. Rent for the leased-in land is substantial and it varies between districts and between irrigated and unirrigated land. Usually unirrigated land is leased in for normal/ 'commercial' cotton and irrigated land for cotton seed cultivation. Households that lease-in irrigated land for seed cotton cultivation in the district of Gadwal pay huge amount towards rent ranging from Rs. 25,000-30,000. The average rent in Gadwal is the highest (Rs. 22,500) followed by Adilabad (Rs. 17,500), Warangal-Rural (Rs. 13,500) and Nalgonda (Rs.7000).

Prevalence of tenancy is much higher in Adilabad, followed by Nalgonda, Gadwal and Warangal. The pattern observed in Adilabad is somewhat different where relatively better-off farmers lease-in land, including from ST communities. In line with higher prevalence of tenancy among the landless, marginal and small landholding households, the incidence of tenancy (leasing-in land) is more among the corresponding backward social groups such as SCs, STs and OBCs. These groups disproportionately bear the brunt of higher production costs in cotton because they are land-poor, and as a result incur higher expenditure on account of land rent.

Access to Credit and Indebtedness

Access to formal credit through public banks has improved over time but it still remains fraught with

issues that continue to persist. Even when farmers access formal loans for cropping, household consumption needs force them to depend on and maintain credit relations with informal lenders. There is a large gap in access to formal credit for cropping. Only about 60 per cent of households surveyed availed crop loans from banks in the kharif season of 2019-20. The problem of access to formal credit is more among the small and marginal holding households which form the major bulk of cotton producers. More than half of these households did not access crop loans this time.

Districts also show a stark difference in access to farm credit. Adilabad and Warangal have relatively better access to formal credit. Gadwal and Nalgonda fare worse in provision of institutional credit, denying it to more than half of the farming households. Here, a large share of farmers lost access to fresh credit because of outstanding loans. Perhaps this disparity reflects the wellbeing/distress of the farming communities besides the level of governance and responsiveness as well as the lobbying strength of the farmers of the respective districts.

Lack of capital forces farmers to enter into exploitative and dependent relations with informal lenders and input retailers for cash loans and inputs on credit. Facilitating access to formal credit was intended to break this nexus of dependence and improve the bargaining power of the farmers in input and produce markets, besides improving production. Most of the farmers depend on loans from informal sources, including many who access formal credit. Nearly 90 per cent of the households borrowed money from informal lenders for cotton farming. Incidence of informal borrowing is highest among the households operating marginal holdings. Districts such as Nalgonda and Gadwal which perform poorly in access to formal credit have very high rates of dependence on informal money lenders. Usually the monthly interest rates are very high ranging between two to three per cent (24 per cent to 36 per cent per annum). On an average more than Rs. 100,000 per household was borrowed for cotton cultivation. Even the marginal households borrowed more than Rs. 80,000 on an average. About 40 per cent of all the households that borrowed money from informal sources had cleared their loans fully and 16 per cent partially after selling the cotton produce this kharif season. A significant number, however, could not repay their debts.

An important feature of this informal lending is its link with other input and produce market transactions. Many of the money lenders are also input sellers and/or commission agents at the market yards or traders (formal or informal traders) of the cotton produce. Input sellers also sell inputs on credit. Credit, both in cash and in kind (inputs) tie down the farmers into obligations of seeking the services of a common player in multiple markets. These interlocked markets serve to consolidate or maximize clientele of individual market players at one level, and maximize their margins by reducing the bargaining power of the farmers in input and output markets, at another level.

Access to credit and sources of credit are crucial in productive spending in cotton farming as well as its outcomes. Cotton farming, in turn, increases creditworthiness and keeps the cycle of credit alive, including for consumption and social spending. This cycle of credit is at high risk because of the volatile nature of cotton cultivation, and shocks and losses in production outcomes result in the accumulation of debts. Though about 60 per cent of households cleared their loans either partially or fully in the current year after harvest, households reported significant amounts of pending loans from both institutional and informal sources - nearly 90 percent of them have debts from either or both sources. On an average these households have a debt of more

than Rs. 100,000 from institutional sources and Rs. 200,000 from informal sources. Pending loans to the tune of Rs. 200,000 among the landless and marginal holding households and to the tune of Rs. 300,000 among the small holding households represent a substantial debt burden which can potentially slide them into distress situation if they experience two consecutive losses. Excessive reliance on one crop and lack of other major sources of income put high stakes in cotton production and threaten sustainability and wellbeing of cotton farmers.

Inputs and Costs

Inputs for cotton cultivation such as seed, fertilizers, pesticides and herbicides have to be purchased privately from licensed retailers by the farmers. The cost of inputs in cotton production becomes unpredictable and exorbitant due to three interrelated issues cause: i). intensity of inputs. ii). lack of information on quality and effectiveness of inputs; and iii). lack of choice on inputs due to credit. These issues manifest in a market ecosystem which is marked by deficiency in policy and regulation on seeds and pesticides produced and marketed by agro-businesses on the one hand and on the other hand, lack of public spending on innovation and provision of these inputs.

Cotton farming is input-intensive, in general, and often there can be unpredictable spike in input requirement. Frequently farmers are forced to sow seed more than once depending on the rate of germination which is affected by either scanty or excess rainfall after sowing, beside the quality of seed. Similarly, unanticipated levels of pest and insect infestation raise the need and use of pesticides and insecticides. Spike in requirement of inputs either raises cost of cultivation or inability to meet such demands results in loss of yields.

Rapid change in technologies and lack of information and reliability on the quality/ effectiveness of inputs such as seed and pesticides cause confusion and worry, and dependence on informal sources of information. Farmers also respond through risk reducing behaviour by adopting multiple products since they cannot rely on the quality of one product. For example, most of the farmers cultivate more than one type/ brand of seed in order to avoid the risk of losing the crop altogether because of a particular seed brand.

Most of the farmers buy inputs on credit, and dependence on input retailers deprives them the choice of inputs as these are sought on credit. Retailers usually thrust farmers with those products that are plenty in stock and those which bring them higher margins. Additionally, inputs are sold at higher than the market price in view of credit, beside charging interest. Thus, lack of running capital and access to sufficient formal credit puts farmers at the discretion of input retailers, deprives them of autonomy in input choice and forces them to incur higher input cost.

Risks and Returns in Cotton Farming

In a semi-arid region like Telangana, cotton cultivation is a lucrative option among rainfed crops. However, it is also the most unpredictable and distress inducing one for the following reasons: One, high intensity of inputs makes it capital-intensive, and if there is loss of crop, it results in severe financial distress. Two, uncertainties of rainfall and pest infestation cause large yield fluctuations, beside affecting quality of the produce. Three, global and domestic demand and supply of cotton and international prices induce high instability in market price of cotton produce. These three dimensions manifest more prominently in cotton, and thus cause higher risk and vulnerability of cotton farmers.

In the kharif season of 2019-20 cotton farmers incurred an average expenditure of Rs. 24,000 per acre of cotton cultivation. This, however, varies across classes of farmers depending on whether the land is leased-in on rent, the extent of family labour relative to hired labour, the ability to buy sufficient amounts of inputs and whether inputs are bought on credit etc. About two-third of cotton farming households experienced marginal returns on cotton production this year, with an average margin of around Rs. 14,000 per acre. Rainfall shortage during sowing season and excessive and untimely rainfall during the harvesting season have affected yields, and more importantly the latter has severely affected the quality of cotton resulting in low market price for the produce. Some households (nearly one-fifth) suffered losses too and the average loss was Rs. 8,500 per acre.

Unlike irrigated regions where cotton is one of the two or three crops cultivated in a year, it is the only crop cultivated when it is cultivated under rainfed conditions during kharif season. Absence of second and third crop in an agricultural year generally entail poor economic condition of households. This also means the stakes are very high in cotton farming in Telangana compared to better irrigated regions, and household incomes and wellbeing are significantly dependent on the outcomes of cotton production. With mere 50 to 60 per cent returns on the cost of cultivation, without imputing cost of family labour, the incomes have been very meagre for the small-scale cotton producers.

Predominance of Intermediaries in the Cotton Supply Chain

The institution of intermediation is central to the cotton production and marketing network and the smooth movement of material, finance and information both inside and outside the wholesale agricultural markets or mandis. The presence of a range of informal money-lenders, traders, brokers at intersecting segments constitute a key feature of this sector. The empirical findings have demonstrated how they enable the movement of cotton from farm level production to the market where it reaches the ginning mills and the next stage of the supply chain.

The continued prevalence of such diverse intermediaries can be attributed to the farmers' reliance on them in fulfilling different functions and satisfying their various needs. While they facilitate the vibrant economies of cultivation and marketing, they also tie the cultivators into exploitative relations due to the protracted history of dependency for raw materials, loans, transport, technology, information and selling the produce. On one hand, without them, the farmers (especially the small and marginal) would struggle to exchange their produce and earn the returns on their labour. On the other, it simultaneously means that farmers are often deprived of fair prices both in the forward and backward ends (input and output) and adequate compensation for their productive activities. They are forced to buy inputs at higher prices, pay interest on loans

and sell their produce (at lower than prevalent market prices) as a condition for debt settlement. These private actors operate through inter-linked markets that connect the processes of input supply, credit (both cash and kind) extension, and thereafter aggregation and transport of kapas in the post-production phase.

The association between these input suppliers/creditors/produce buyers and the cultivators have assumed particular importance due to the poor provisioning of formal credit, inputs, lack of accessible transportation options and an overall inadequacy of the state to extend appropriate support mechanisms. The character of this long-standing socio-economic relationship between these players have changed over time and place. The pre-eminence of the informal traders and brokers was higher in the districts of Nalgonda and Gadwal where a bigger proportion of farmers were obligated to sell their produce to them compared to Adilabad and Warangal. It is critical to unpack the mechanisms underlying the inter-linked markets in which such spatial relations are embedded to develop a comprehensive understanding of the cotton supply chain.

Variation in Market Transaction Across Districts

A multitude of choices and decisions confront the farmers at the pre-production phase in terms of sourcing inputs, securing loans for both production and consumption, seed and fertiliser selection and cultivation practices and techniques. At the downstream stage, they adopt miscellaneous routes to sell their produce contingent on their asset endowment, scale of operation, quantity and quality of the harvest, picking round and timing, storage and transportation possibilities and financial need. There is no singular means of cotton trade and it is not restricted at the market given a series of private players sourcing the cotton from the cultivators much before it reaches the markets. Usually such buying and selling are conducted at prices considerably lower than prevailing market rates and proves detrimental to the farmers' interests. Informal borrowing practices, urgent monetary requirements and lack of market access reduce their bargaining power in private transactions which substantially reduces their share. There are two broad avenues through cotton can reach the market, one through private exchange and second through public procurement, each involving diverse channels and players.

The market structure and forces influence farmers' decisions, options and the price that they eventually receive. Across the four study districts, significant variations were observed in the nature and functioning of the market. This resulted in different levels of farmers' participation, direct interaction with the buyers and control of the intermediaries, which manifested into divergent earnings across social groups. The districts of Adilabad and Warangal with well-constituted mandis under the regulation of APMC saw a higher presence of farmers in the market interactions compared to the other two districts. Having embarked on cotton production earlier, the market institution in Warangal and Adilabad has evolved and strengthened over time. In contrast, Nalgonda and Gadwal do not have comparable structures in place yet as they are later entrants in cotton cultivation. This creates more space for informal traders and noticeably weakens the farmers' terms of engagement and trade in marketing their produce which effectively impedes realisation of better prices and returns. In the case of Gadwal, the produce frequently has to be transported all the way to Raichur in Karnataka which makes transportation expensive and difficult for farmers to manage financially and logistically. The study shows the primacy of a well-

functioning market ecosystem in determination of competitive prices and remunerative returns to the producers.

Role of the State and Deficiencies

The state has endeavoured to provide support to the farmers and accordingly constituted and regulated agricultural markets for transparent trading, set-up procurement and storage infrastructure, and aided farmers in selling through the system of commission agents among other support mechanisms. It has sustained a certain level of demand of the cotton produce and has thus also assisted and sustained the ginning mills in uncertain market conditions.

A crucial role of the state is in protecting the cultivators from lack of demand, market risks and price fluctuations through direct state procurement at the minimum support price (MSP). This is to ensure that farmers gain from competitive market prices when domestic demand (linked to international commodity markets) falls and licensed and unlicensed private traders obtain cotton from the cultivators at very low prices. Due to the MSP and public procurement by the CCI, these private buyers are prevented from depressing purchasing prices too much, not simply at the mandis and ginning mills but also when buying from the villages. An inter-related objective of state policy is to also weaken the system of intermediaries that extract the farmers' produce by tying them in credit bondage, especially for the small and marginal farmers and landless cultivators. Additionally, government intervention in terms of market regulation and infrastructure, and monitoring mechanisms has created a more transparent system improving the bargaining position of the farmers. While the strong presence of the state does not eliminate intermediaries, it surely increases price competitiveness and relatively enhances the relational power of the farmers vis-à-vis the input retailers and informal money-lenders.

As presented through the detailed description of the different channels of kapas exchange, the produce is sold at the farm gates, villages, nearby towns and other local sites of transaction where private buyers acquire the cotton and channelise them to the market. In Telangana, despite the recent substantial increases in MSP and active state campaigning to disseminate information to the farmers (explicitly observed in Adilabad through initiatives of the District Collector), many producers continue to sell to non-state buyers. This is not a regulatory oversight but rather an inability to reach out to the farmers and increase the uptake of cotton directly from them. The field study showed that while the farmer households wholly and partially selling to CCI was quite high in Adilabad, it was considerably lower in the rest of the districts and very meagre in Gadwal.

It should be borne in mind that farmers sell to private buyers despite the knowledge that they are receiving less than the state offered price. In

Nalgonda and Gadwal, farmers have sold their initial pickings to informal traders at significantly lower prices than the MSP. While they can be debt bound to sell to the informal creditors, there are also various problems that encumber the access to state procurement. The highly stringent quality parameters of the CCI means that many and much of the farmers' produce might not qualify for purchase, especially in events of untimely rain. The rationale behind the farmers' inability and undesirability to sell to the state can be summarised as bureaucratic hurdles and delays which entail deferred payment, long procurement process and waiting period, cumbersome documentation requirement in addition to quality issues. All these factors influence and force farmers to resort to private selling and prevent them from reaping the advantage of MSP.

The informal traders and brokers are also found to infiltrate the system of apparent direct procurement and eat up the margins that was supposed to accrue to the actual producers who are the intended beneficiaries. This study has shown how they undermine the stated objective of state procurement by undercutting the farmers and profiting from the price differential at which they buy the produce and thereafter sell to CCI at higher prices. They successfully manoeuvre the system by posing as bonafide farmers and override the state claims of transparency and farmers' support, consequently depriving the cultivators of the benefits of MSP.

The cotton industry sustains the lives and livelihoods of numerous actors, most importantly the cotton growing communities. They are the producers of cotton in its first appearance and comprise the foundation and backbone of the network. However, the returns they receive are not commensurate with their contribution and uneven distribution of gains characterise the cotton supply chain as manifest in that of other primary products. By its scope and design, this study has not investigated the returns and profits across the entire length and breadth of the chain. But the findings critically capture the precariousness of the farmers and labourers, specially the more socio-economically marginalised who have meagre landholdings and earn paltry wages. The earnings of these households are highly dependent on the outcomes of cotton production, the inadequacy of which frequently necessitates supplementary sources of income. The farmers' income vulnerability is compounded by high outlays due to rising costs of cultivation, production risks, high pesticide usage, labour shortage in peak season, adverse weather and unfavourable market forces among others. The overall downward trends and shifts in the global supply chain of cotton affect their livelihood and degree of state protection and support are often unable to provide the much-required safety net.

Policy Suggestions

Farmers' production and marketing choices and decisions are contingent on a combination of factors and are often made under duress. These challenges are particularly pronounced for the small, marginal and landless farmers with poor asset endowments and limited access to state support measures. Broad areas and specific challenges that continue to call for policy attention relate to credit, inputs, agro-technological information, and produce price.

Credit

Informal lending practices have long characterised the agricultural economy. Though formal credit opportunities have improved, three issues continue to push farmers towards informal credit, which needs to be addressed.

One, more formal credit can reduce dependence on informal lenders as well as potentially improve terms of informal credit. We have shown that despite accessing formal credit most of the farmers have incurred informal loans. More credit and at concessional rates are the way forward. These are already being proposed by the government this year, which should effectively reach cotton farmers. The apprehension of defaulting in view of anticipated loan waiver announcements by governments can be overcome by special incentives. While loan waivers are a significant policy option under duress, farmers who clear outstanding loans should be compensated and provided with equivalent incentives in order to encourage timely and continuous transactions.

Two, this study has shown that many small and marginal farmers could not access fresh loans because of outstanding loans. Many of them have, however, been only clearing the interest, but without access to fresh loans. State should evolve ways towards their financial inclusion gradually, with smaller loans to start with once again.

Three, tenant farmers are deprived of crop loans in absence of land as collateral, and these farmers have been carrying higher burden and risks of cotton farming. The Farmers Commission constituted by the Government of Andhra Pradesh had recommended in 2006 for provision of crop loans to tenant farmers. There was a policy implemented to secure credit for tenants before the bifurcation of state. This policy needs to be revived and effectively implemented in the state. There is a push for increasing collateral-free agricultural loans in the recent years which should be targeted towards tenant farmers.

Informal credit in itself is not undesirable, if the terms of transactions are not usurious. There should be mechanisms in place to monitor usurious lending and campaigns against exploitative forms.

Input Technologies and State Role

There is no reliable source of information on the advantage of one brand of seed over the other or the effectiveness of a particular pesticide/insecticide depending on the nature of infestation. Despite acquiring knowledge on the various activities of cotton farming, the market dynamics of seed and pesticide technology preclude an assessment of their quality or their precise advantage/disadvantage. There are too many brands of every input and farmers desperately try newer products every year. Despite the inherent conflict of interest, the input company promoters, distributors and retailers are the main source of information on the inputs they promote and sell to farmers. State has hardly promoted reliable and sustainable technologies, nor has it created mechanisms to clear confusion on the existing or new technologies.

The official channels of information dissemination and knowledge assistance should

be strengthened in order to reach the farmers. There should be active and legitimate mechanisms to check and monitor the products in the market and whether these are effective and are used for appropriate purposes.

There is an urgent need for comprehensive policies and creation of a regulatory mechanism for pesticides and seeds. Though Bt cotton seed price is regulated and made uniform across states since 2016, several issues pertaining to the quality and monitoring of new traits and innovations remain. The draft Seed Bill 2019 has been contested by both farmers' groups and activists on one side and private seed companies on the other. Herbicide Tolerant Bt cotton is illegally produced and sold to farmers despite its ban in view of environmental and health hazards. Regulations to curb hazardous weedicides and pesticides as well as agricultural extension to inform farmers on the appropriate agricultural practices are needed. Environmental sustainability, health and safety should assume high priority in the process of promoting pesticide and seed technologies.

There is significant potential for improving yields, minimising risks of poor harvests, and improving the outcomes for cotton farmers in Telangana. This can be achieved through substantial public investment in agricultural research and strengthening of agricultural extension activities. More sustainable and productive technologies in cotton production can have long lasting impact in the regional agrarian development.

The state government under its new policy on cropping systems has been encouraging a shift towards cotton cultivation from the current acreage of 50 lakh acres to 70 lakh acres under cotton. Accordingly, it should also prioritise to strengthen supporting structures and policy if the benefits of shifting to cotton have to reach the farmers substantially. However, decreasing instead of increasing diversity of crops, would increase the stakes of farmers in one crop and can prove costly to individual famers in case of losses, and could be detrimental to agro-ecological sustainability in the long run. A more scientific and sustainable approach suitable to agro-ecological conditions needs to be adopted in engineering a shift in cropping practices. Importantly, the cropping policy should bear in mind that cotton fibre may not continue to hold the same demand and competitiveness in the context of other emerging fibres. It would depend on the promise of the cotton industry at large. Excessive reliance on a particular crop can thus risk regional development and wellbeing of farmers.

Fair Price for The Produce

The farmers also are afflicted by limited storage options and high transportation expenditure involved in taking their produce to the wholesale markets constituted by the state from often distant and remote villages. It has been argued that government needs to expand the coverage of

mandis so that the cultivators can physically reach these sites without incurring heavy costs. Our study shows the primacy of a well-functioning market ecosystem in determination of competitive prices and remunerative returns to the producers. Strengthening of the market infrastructure by creating cotton market yards along with suitable storage space for accumulating (and also drying the moist cotton) kapas would go a long way in this regard.

Higher presence and participation of farmers in the market was observed in the districts of Adilabad and Warangal (which have well-constituted mandis) compared to the other two districts. Where there are no centralised APMC mandis in Nalgonda and Gadwal, a greater proportion of farmers were found to be selling to private creditors and input retailers, weakening the formers' terms of engagement and trade in marketing their produce. Investment in market infrastructure and better regulatory planning for market structure that can considerably reduce brokerage and its adverse impact on the cotton growers. Another important requirement in ensuring that the MSP reaches the true beneficiaries would be to smoothen the process of procurement and minimise the procedural hurdles in terms of farmers' documentation requirements, registration and payment. Many farmers complained about the long waiting time at the procurement centres, whereby they incur additional cost for the vehicles they hire for transportation among other inconveniences. These bottlenecks compromise the efficacy of the state procurement system and suitable reforms in this regard can help in the realisation of the advantages of MSP.

State has to revisit the quality criteria in cotton procurement, as the present criteria excludes majority of farmers and the produce. While MSP acts as a cushion for farmers, disqualification of the cotton produce by the public procurement agency exposes farmers to the mercy of private traders, even though most of what is labelled as low quality is traded or exported. Market and procurement policy should evolve mechanisms to ensure that farmers do not disproportionally suffer for a few points lower than the stipulated quality threshold. A broader spectrum or graded quality parameters should be evolved so that quality and price rationalization is achieved and the farmers are protected.

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APPENDIX

Table 1.1

Area, Production and Productivity of Cotton in India (1947-1948, 1950-1951 to 2019-2020-2nd Advance Estimates)

Year	Area (In ' 000 Hectare)	Production (In ' 000 Bales of 170 Kgs. each)	Productivity (In Kg./ Hectare)	%age Coverage under Irrigation
1947-1948	4424	3336	132	-
1950-1951	5882	3044	88	8.2
1951-1952	6556	3276	85	9.1
1952-1953	6359	3341	89	8.5
1953-1954	6987	4125	100	8.4
1954-1955	7546	4445	100	9.8
1955-1956	8086	4181	88	10.0
1956-1957	8019	4924	104	11.0
1957-1958	8014	4962	105	12.7
1958-1959	7964	4879	104	12.5
1959-1960	7295	3676	86	12.9
1960-1961	7610	5604	125	12.7
1961-1962	7978	4850	100	13.0
1962-1963	7730	5336	122	14.1
1963-1964	8221	5747	119	15.3
1964-1965	8365	6011	122	15.5
1965-1966	7962	4852	104	15.9
1966-1967	7836	5266	114	16.1
1967-1968	7995	5777	123	16.7
1968-1969	7596	5447	122	16.5
1969-1970	7731	5564	122	16.4
1970-1971	7605	4763	106	17.3
1971-1972	7800	6950	151	20.3
1972-1973	7679	5735	127	21.0
1973-1974	7574	6309	142	22.1
1974-1975	7562	7156	161	22.9
1975-1976	7350	5950	138	23.5
1976-1977	6885	5839	144	24.6
1977-1978	7866	7243	157	26.2
1978-1979	8119	7958	167	27.2
1979-1980	8127	7648	160	27.5
1980-1981	7823	7010	152	27.3
1981-1982	8057	7884	166	27.7
1982-1983	7871	7534	163	29.0
1983-1984	7721	6386	141	29.9
1984-1985	7382	8507	196	28.5

Year	Area (In ' 000 Hectare)	Production (In ' 000 Bales of 170 Kgs. each)	Productivity (In Kg./ Hectare)	%age Coverage under Irrigation
1985-1986	7533	8727	197	30.2
1986-1987	6948	6905	169	31.1
1987-1988	6471	6432	169	32.0
1988-1989	7343	8744	202	33.0
1989-1990	7695	11422	252	34.2
1990-1991	7440	9842	225	32.9
1991-1992	7661	9706	215	33.3
1992-1993	7542	11403	257	34.6
1993-1994	7321	10741	249	34.7
1994-1995	7871	11888	257	34.2
1995-1996	9035	12861	242	35.0
1996-1997	9121	14231	265	35.8
1997-1998	8868	10851	208	36.8
1998-1999	9342	12287	224	34.9
1999-2000	8710	11530	225	35.2
2000-2001	8534	9520	190	34.3
2001-2002	9132	9997	186	34.0
2002-2003	7670	8624	191	33.1
2003-2004	7598	13729	307	27.1
2004-2005	8787	16429	318	36.9
2005-2006	8677	18499	362	36.1
2006-2007	9145	22632	421	35.0
2007-2008	9414	25884	467	35.1
2008-2009	9407	22276	403	35.3
2009-2010	10132	24022	403	35.3
2010-2011	11235	33000	499	38.8
2011-2012	12178	35200	491	35.9
2012-2013	11977	34220	486	-
2013-2014	11960	35902	510	-
2014-2015	12846	34805	461	-
2015-2016	12292	30005	415	-
2016-2017	10826	32577	512	-
2017-2018	12586	32805	433	-
2018-2019	-	28042	-	-
2019-2020*	-	34891	-	-

Note : *2nd Advance Estimates.

Source : Ministry of Agriculture & Farmers Welfare, Govt. of India. (ON2271) & Past Issues.

Table 1.2

State-wise Area, Production and Productivity of Cotton in Select States in India

Selected State-wise Area, Production and Productivity of Cotton in India (2019-2020-upto 28.11.2019)

States	Area (In Lakh Hectare)	Production (In Lakh Balesof 170 Kg. each)			Yield (In Kg./Hectare)
		Pressed Bales	Loose Cotton	Total	
Andhra Pradesh	5.86	14.10	5.90	20.00	580.20
Gujarat	26.29	91.80	3.20	95.00	614.30
Haryana	7.01	19.00	3.00	22.00	533.52
Karnataka	5.50	16.90	1.10	18.00	556.36
Madhya Pradesh	6.10	19.30	0.70	20.00	557.38
Maharashtra	43.69	76.25	5.75	82.00	319.07
Odisha	1.70	3.95	0.05	4.00	400.00
Punjab	3.92	10.50	2.50	13.00	563.78
Rajasthan	6.45	23.90	1.10	25.00	658.91
Tamil Nadu	1.28	3.80	2.20	6.00	796.88
Telangana	17.61	52.40	0.60	53.00	511.64
Others	0.43	2.00	0.00	2.00	790.70
India	**125.84**	**333.90**	**26.10**	**360.00**	**486.33**

Note : Figures are provisional.
: Figures related to cotton year (October-September).
Source : Ministry of Textiles, Government of India.

Table 1.3

Bt Cotton Adoption and Production Expansion in India

Bacillus Thuringieusis (Bt) Cotton Adoption and Production Expansion in India (2002-2003 to 2011-2012)

	BT. Cotton Adoption		Production
Year	Area (In Lakh Hectare)	% of Total Area Under Cotton	Lakh Bales of 170 kg Each
2002-03	0.294	0.36	86.24
2003-04	0.931	1.22	137.29
2004-05	4.985	5.66	164.29
2005-06	10.148	11.16	184.99
2006-07	34.610	37.84	226.32
2007-08	63.340	67.28	258.84
2008-09	68.810	76.39	222.76
2009-10	80.550	79.50	240.22
2010-11	95.500	85.04	330.00
2011-12	111.39	92.00	352.00

Source : Lok Sabha Unstarred Question No. 5122, dated on 08.05.2012. & Lok Sabha Unstarred Question No. 1216, dated on 05.03.2

Table 1.4

Area, Production and Productivity of Cotton (state-wise) 2008-09 onwards

(AREA IN LAKH HECTARE, PROD IN LAKH BALES 170 KGS, YIELD KGS PER HECT)

Year	2009-10			2010-11			2011-12			2012-13			2013-14		
State	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield
Punjab	5.11	13.00	432	5.30	18.50	593	5.60	20.00	607	4.80	21.00	744	4.46	21.00	800
Haryana	5.07	15.25	511	4.92	17.00	587	6.41	26.00	690	6.14	26.00	720	5.36	24.00	761
Rajasthan	4.44	12.00	459	3.35	10.10	513	4.70	18.00	651	4.50	17.00	642	3.93	14.00	606
North total	**14.62**	**40.25**	**468**	**13.57**	**45.60**	**571**	**16.71**	**64.00**	**651**	**15.44**	**64.00**	**705**	**13.75**	**59.00**	**729**
Gujarat	26.25	98.00	635	26.33	106.20	686	29.62	122.00	700	24.97	93.00	633	25.19	124.00	837
Maharashtra	35.03	65.75	319	39.32	87.75	379	41.25	76.00	313	41.46	81.00	332	41.92	84.00	341
Madhya Pradesh	6.11	15.25	424	6.50	17.70	463	7.06	18.00	433	6.08	19.00	531	5.14	19.00	628
Central total	**67.39**	**179.00**	**452**	**72.15**	**211.65**	**499**	**77.93**	**216.00**	**471**	**72.51**	**193.00**	**452**	**72.25**	**227.00**	**534**
Telangana															
Andhra Pradesh	14.75	54.50	628	17.84	59.50	538	18.79	60.00	543	24.00	84.00	595	23.89	78.00	555
Karnataka	4.55	12.25	458	5.45	11.10	346	5.54	15.00	460	4.85	17.00	596	6.62	23.00	591
Tamil Nadu	1.04	5.00	817	1.22	7.20	1003	1.33	6.50	831	1.28	6.00	797	1.52	5.00	559
South Total	**20.34**	**71.75**	**600**	**24.51**	**77.80**	**540**	**25.66**	**81.50**	**540**	**30.13**	**107.00**	**604**	**32.03**	**106.00**	**563**
Orissa	0.54	1.00	315	0.74	2.05	471	1.02	3.50	583	1.19	4.00	571	1.24	4.00	548
Others	0.21	1.00	810	0.45	2.00	1030	0.46	2.00	739	0.51	2.00	667	0.33	2.00	1030
TOTAL		**293.00**			**339.1**			**367.00**			**370.00**			**398.00**	
Loose cotton		12.00													
TOTAL	**103.10**	**305.00**	**503**	**111.42**	**339.10**	**513**	**121.78**	**367.00**	**512**	**119.78**	**370.00**	**525**	**119.60**	**398.00**	**566**

Year	2014-15			2015-16			2016-17			2017-18(P)*			2018-19(P)*		
State	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield	Area	Prod	Yield
Punjab	4.20	13.00	526	3.39	6.25	313	2.85	9.00	537	2.91	11.50	672	2.84	11.50	688
Haryana	6.48	23.00	603	6.15	14.50	401	5.70	20.50	611	6.69	22.50	572	6.65	27.00	690
Rajasthan	4.87	17.00	593	4.48	15.00	569	4.71	16.50	596	5.84	22.00	640	4.96	22.00	754
North total	**15.55**	**53.00**	**579**	**14.02**	**35.75**	**433**	**13.26**	**46.00**	**590**	**15.44**	**56.00**	**617**	**14.45**	**60.50**	**712**
Gujarat	27.73	112.00	687	27.22	90.00	562	23.82	95.00	678	26.23	104.00	674	27.09	92.00	577
Maharashtra	41.90	80.00	325	42.07	76.00	307	38.00	88.50	396	42.07	85.00	343	41.19	81.00	334
Madhya Pradesh	5.74	19.00	563	5.63	18.00	544	5.99	20.50	582	6.03	20.50	578	6.97	24.00	585
Central total	**75.37**	**211.00**	**476**	**74.92**	**184.00**	**418**	**67.81**	**204.00**	**511**	**74.33**	**209.50**	**479**	**75.25**	**197.00**	**445**

Telangana	17.13	50.50	501	17.73	58.00	556	14.09	48.00	579	18.97	55.00	493	17.94	53.00	502
Andhra Pradesh	8.21	26.50	549	6.66	23.75	606	4.72	19.00	684	6.44	20.50	541	5.51	20.00	617
Karnataka	8.75	34.00	661	6.42	19.50	516	5.10	18.00	600	5.46	18.00	560	5.75	18.00	532
Tamil Nadu	1.87	6.00	545	1.42	6.00	718	1.42	5.00	599	1.85	5.50	505	1.40	6.00	729
South Total	**35.96**	**117.00**	**553**	**32.23**	**107.25**	**566**	**25.33**	**90.00**	**604**	**32.72**	**99.00**	**514**	**30.60**	**97.00**	**539**
Orissa	1.27	3.00	402	1.25	3.00	408	1.36	3.00	375	1.45	3.50	410	1.58	4.50	484
Others	0.31	2.00	1097	0.50	2.00	680	0.50	2.00	680	0.50	2.00	680	0.50	2.00	680
GR TOTAL	**128.46**	**386.00**	**511**	**122.92**	**332.00**	**459**	**108.26**	**345.00**	**542**	**124.44**	**370.00**	**505**	**122.38**	**361.00**	**501**

Source: Cotton Advisory Board as per meeting 16.6.18(P)-Provisional

Inclusive of State-wise Loose cotton production of 26.10 lakh bales as per survey of "loose cotton delivery and consumption in India" undertaken by ATI

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