
THE PRICE OF CHILDHOOD

ON THE LINK BETWEEN PRICES PAID TO FARMERS AND THE USE OF CHILD
LABOUR IN COTTONSEED PRODUCTION IN ANDHRA PRADESH, INDIA

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SECTION-I

INTRODUCTION

The principal aim of the present study is to examine whether or not the procurement price policy of the seed companies has any relationship with the widespread use of child labour in hybrid cottonseed production in Andhra Pradesh. The issue has acquired particular significance in the context of recent debate on this issue where contrasting views are expressed by the seed industry on the one hand, and child rights advocacy/campaign groups and farmers' organisations on the other.

Background

The issue of child labour in hybrid cottonseed production in the state of Andhra Pradesh, India has recently received attention from national and international media, government, Non Governmental Organisations (NGOs), social investor groups, international agencies like ILO/IPEC, UNICEF and UNDP and the seed industry. The uniqueness of the child labour problem in hybrid cottonseed production is that the majority of workers in this sector are children, particularly girls. No other industry in India has such a high proportion of child labour in its workforce. The exploitation of child labour in this industry is linked to larger market forces. Children are employed on a long-term contract basis through advances and loans extended to their parents by local seed farmers. These farmers, in turn, have agreements with seed companies (local, national and trans-national) who produce and market hybrid cotton seeds.

Farmers employ children, particularly girls, primarily in order to minimize costs. Earlier studies by these authors¹ which examined reasons for child labour in this industry found that labour costs account for about 50% of total cultivation costs. Farmers endeavour to cut these labour costs by hiring children because the wages paid to children are far below both the market wages for adults in other agricultural field work and even further below official minimum wages. Farmers also hire children in preference to adults because farmers can squeeze out higher productivity from children per day: children will work longer hours, will work much more intensively and they are generally much easier to control than adult workers – whether through verbal or physical abuse or through inexpensive treats like chocolate or hair ribbons. Moreover, children cannot complain as effectively as adults do when they are exposed to poisonous pesticides, which are used in very high quantities in

¹ Venkateswarlu, D. and L. da Corta (2001) 'Transformations in Age and Gender of Unfree Workers on Hybrid Cottonseed Farms in Andhra Pradesh' Journal of Peasant Studies, Vol. 28, No. 3, pp 1-36.

Venkateswarlu, D. (2001) 'Seeds of Bondage: Female Child Bonded Labour in Hybrid Cottonseed Production in Andhra Pradesh' jointly published by Business and Community Foundation and Plan International (India Chapter) New Delhi.

cottonseed cultivation. Moreover, children work in the context of partial adult unemployment – children work whilst their parents cannot².

Hybrid cottonseed production in India is largely concentrated in two states, namely, Andhra Pradesh in South India and Gujarat, a state in the central part of India. These two states account for nearly 75% of total cottonseed production in the country. Until recently AP used to be the largest producer of cottonseed but now Gujarat has overtaken this position. Yet all the important companies involved in cottonseed business in India have their production and marketing base in Andhra Pradesh. Cottonseed production is carried out through contract farming. Companies depend upon local farmers for seed production. They arrange seed buy back arrangements with local farmers through middlemen called 'seed organizers'. Seed organizers thus mediate between companies and farmers. Although seed companies are not directly involved in the production process, they exert substantial control over farmers and the production process by supplying foundation seed, advancing production capital, fixing the procurement prices and through stipulating quality controls.

Currently there are about 100 seed companies including MNCs involved in the cottonseed business in Andhra Pradesh. Whilst nearly 77% of the cottonseed production area in Andhra Pradesh is controlled by the organized sector, the remaining 23% production area is controlled by what is labeled the unorganized sector - those individuals and small firms who do not have legal registration and recognition³. During last three years the area covered by the unorganized sector has grown because of the increasing area under illegal production of BT cottonseed in A.P. Since 2002, with the introduction of [REDACTED] BT cotton, several unorganized sector players have been encouraged to enter into the illegal production of BT cottonseeds because of the huge profits made through the illegal production of BT seeds.

Thanks to the efforts of local and international NGOs, the government, international bodies like ILO, UNICEF, UNDP, media and social investors, a great deal of awareness has been created about the problem of child labour in this industry. This raised awareness has put the seed industry under pressure to pay serious attention to this problem. As a result, several national and multi-national companies have begun to initiate steps to address this issue. In September 2003, the [REDACTED] (in India) decided to take concerted action to eliminate child labour in the cottonseed industry in India through collaboration with the MV Foundation, a leading child rights organisation in India. Since then, the [REDACTED] tried to motivate seed organizers and farmers to stop the employment of children through meetings, posters, pamphlets, print and electronic media. In a separate move, with the support from ILO/IPEC, the [REDACTED]

² In the areas where cottonseed production is concentrated unemployment and out migration for wage work among adult labour is high. Mahaboobnagar district in Andhra Pradesh where cottonseed production is concentrated is well known across the country for large scale distress migration of agricultural labourers to urban areas in search of wage work.

³ Out of 14000 acres under cottonseed production in Andhra Pradesh during 2003-04, 27% was controlled by [REDACTED] (all multinational seed companies namely [REDACTED] are members of [REDACTED]. Indian companies namely [REDACTED] are also members of [REDACTED]). Non [REDACTED] companies like [REDACTED] accounted for nearly 50% of the area and the remaining was controlled by the unorganized sector.

The price issue at least can address a part of the whole problem and other interventions will be more effective once it is resolved.

Seed Industry Counter-Argument

The findings of these reports have been criticised by the seed industry stating that the sample size used in these studies is very small and they lack an in-depth economic analysis of trends in cost of cultivation, yields and profits. The [REDACTED] holds the view that the employment of child labour in cottonseed production is in no way linked to procurement price policy adopted by the companies. It argues that cottonseed farmers have relatively better profit margins compared to other farmers and the procurement rates offered invariably exceed the cost of production sufficiently to enable the employment of adult labour at adult wage rates. It puts the blame for the high incidence of child labour squarely on the shoulders of the seed farmers⁶.

In this context there is a need for a detailed economic study of costs of cultivation, wage rates, yields, prices and profits in cottonseed production. The present study is an attempt to fill this gap. In this study we ask what the price is of replacing child labour in cottonseed, or in other words, what is the price of child freedom from labour and who is going to bear it?

Objectives of the study

- To conduct an in-depth analysis of the economics of cottonseed production: the costs of production (including labour and non-labour costs), output and income, and profit over a three year period (2002-2004).
- To assess to what extent the procurement price policy of the seed companies contributes to the widespread use of child labour in hybrid cottonseed production.
- To calculate how far procurement prices would need to rise in order to enable the full scale replacement of child labour by adult labour at both local market wage rates and at official minimum wage rates.

⁶ On June 24th 2005 [REDACTED] hosted a consultative meeting at Hyderabad to discuss the issue of child labour in cottonseed production. This meeting was attended by the representatives of [REDACTED] seed organizers, NGOs and the state government. The issue of price and its link to child labour was discussed during this meeting. There was a difference of opinion between seed company representatives and NGOs regarding the link between procurement price policy and use of child labour. During this meeting [REDACTED] hold the view that the employment of child labour in the cottonseed production is not linked to the procurement price policy adopted by companies. It argued that cottonseed farmers have relatively better profit margins compared to other farmers. Procurement rates offered invariably exceed the cost of production considering the wages paid to adult labourers, and provide enough margins in order to hire adult labourers. For improving incomes of farmers increasing price is not a solution. Efforts have to be made to improve the productivity levels.

Methodology and Sampling

The present study is mainly based on the analysis of primary data collected through field visits and surveys in 38 sample villages spread over ten mandals, six in Kurnool district and four in Mahaboobnagar district of Andhra Pradesh. The field survey for the present study was conducted during February to May 2005. Details of sample villages and mandals selected for this study are given in the appendix. Kurnool and Mahaboobnagar districts account for nearly 90% of the cottonseed production area in the state. Compared to Kurnool, Mahaboobnagar is a relatively more agriculturally backward region. Large scale seasonal out-migration of agricultural labour to urban areas in search of work is more prevalent in this district.

For the analysis of farm economics data, a sample of 100 farmers who had continuously engaged in cottonseed cultivation during 2002-03 and 2004-05 has been selected from the 38 sample villages through a stratified random sampling method. While selecting the sample, variations in farm size (small and big), ownership pattern (owner or tenant) and geographical variations were considered. For an analysis of trends in cost of cultivation, we collected data on workforce composition, wage structure, output, prices and income which covered a three year period (2002-2004). Data was disaggregated by farm size and region. For the purpose of this study, a small farmer was defined as one cultivating less than two acres of cottonseed and a big farmer defined as cultivating two or more acres.

In estimating labour costs, family labour time is costed at market wages, following a common method found in cultivation studies. Regarding interest payments we recorded interest on capital borrowed from moneylenders, banks and seed companies. For own capital, we impute 12% interest cost which represents the opportunity cost of not having own capital invested it in the bank.

SECTION-II

ECONOMICS OF COTTONSEED CULTIVATION: TRENDS IN COST OF PRODUCTION AND PROFITS

In this section we explore trends in costs of production and profits over a three year period 2002/3 to 2004/5. We identify a sharp rise in labour costs since 2002 and examine the reasons for this rise by examining wage inflation and the changing composition of the cottonseed labour force. We then turn to profits. We find that these rising costs together with shocks to yields resulting from periodic pest attacks together with falling or very slow rising buying prices for seeds, lint and cotton products have cut sharply into farmers' profits. Given this tri-partite assault on profits - rising costs, variable output, and falling or slow rising prices -, in section-III, we explore the feasibility of farmers' replacing child labour with adult labour through several estimates of the costs of this replacement under current cost conditions.

Costs of Production: 2002-2004

One of the most striking things one first notices when examining the survey data is that cultivation costs rose by 14.6% over the period 2002 to 2004.

Table 1: Average Costs per acre over the period 2002-2004 (amount in Rs.)

	2002	2003	2004	Rise or fall since 2002
Non-labour costs	31,934	33,303	34,473	+2539 (8.0% rise)
Labour costs	26,090	29,481	32,049	+5959 (22.8% rise)
Total costs	58,024	62,784	66,522	+8498 (14.6% rise)

Non-labour costs

Part of the rise in costs is attributable to the rise in non-labour costs, which rose by 8.0%. The rise in non-labour costs is attributable chiefly to the rise in rent (+ Rs. 1417, +21%), pesticides (+ Rs. 1074, +15%), fertilizers (+ Rs. 483, +10.9%) and interest payments (+ Rs. 440, +7.4%). Regarding interest payments it is important to note that companies/seed organizers charge twice (24%) the interest rates that banks charge (12%) on pre-season crop loans – this affects smaller farmers the most (see the section on big and small farmers below). One type of cultivation cost - seed processing - fell slightly (2.7%) but this did not greatly affect the overall 8.0% rise in non-labour costs.

Labour costs

The second more important reason that cultivation costs rose was the major rise in labour costs (+ Rs. 5959, 22.8%). This rise is due almost entirely to the rise in *cross-pollination*

costs – where most child labour is used. Cross-pollination (per acre per season) costs rose from Rs. 23,306 to Rs. 29,239 (+ Rs. 5934 or a 25.5% rise over the 3 years). Thus cross-pollination accounts for 99.6% of this rise in labour costs and it is also the activity where the most child labour is used.

What distinguishes cottonseed production from other local crops - such as paddy, jowar or cotton - is that the production of hybrid cotton seed is very labour intensive. A chief part of this production is cross-pollination which is done manually and this activity alone requires about 90.3% of the total labour expended and 45% of the total capital used and is done mostly by female children. Cross-pollination involves two separate activities: emasculation and pollination. The buds, which are expected to open up the next morning, are selected for 'emasculation'. Emasculation should then be done in the afternoon. These buds should be gently removed without injuring the gynaecium. Doak's method of emasculation of the flower bud is used, which consists in the removal of bracts first by hand, and then the petals, along with the entire anther-sac whorl, with the nail of the thumb, without damaging the stigma, style or ovary. The emasculated flower should be carefully covered with red plastic paper bags. Pollination should be done in the morning hours with the pollen of male parents. Crossing needs to be done as soon as the flowers blossom before the female flowers bear fruit (and consequently produce non-hybridised or 'fake' seeds). It is clear from the above discussion that cross-pollination work needs to be done very carefully, with much patience, by a disciplined work force. About 2 months after sowing, the plant starts blossoming and continues growing for five months. During this time, cross-pollination (both emasculation/pollination) need to be done everyday, without fail. The duration of cross-pollination is three to four months.

Wage inflation

Why have cross-pollination costs risen so much – 25.5% - over the past three years? One reason is that average wages in cottonseed production have risen by 16%.

Table 2: Average Wages per Hour in Cottonseed Production 2002-2004 (amount in Rs.)

	2002	2003	2004	Total rise
Kurnool	3.1	3.3	3.6	0.5 (16.1%)
Mahaboobnagar	2.5	2.7	2.9	0.4 (16.0%)

Note: Monthly wage is the predominant form of wage arrangement followed in employing labourers in cottonseed farms in most parts of Kurnool district. Migrant labour is also concentrated in this area. 55-60% of labour force in cottonseed production is migrant labour. There are inter and also intra village variations in wage rates to paid to local and migrant labour. During 2004-05 monthly wage rates paid to local labourers varied between Rs. 1100 to Rs. 1500 and for migrant labourers between Rs. 1000 to Rs. 1200. The wage rates for migrate labour does not include free food provided to them. This approximately Rs. 300. If we add this amount to wages for migrant labour the difference in wages for them and locals is not very significant. In majority of farms the wage rates paid to adult labour and children in the age group of 13 and 14 years are the same. Large number of adults found in our sample farms are young people - boys and girls in the age groups of 15-18 years. The children below 13 years and also children who are newly recruited are paid 100 to 200 Rs. less than others. In this area workers are made to work 13.5 hours a day (from 5.50 am to 6.30 pm).

The wage rates in cottonseed farms in Mahaboobnagar are low compared to Kurnool. Unlike in Kurnool there is no monthly wage system here. Though long term agreements are common in both areas in Mahaboobnagar wages are fixed on daily basis. During 2004-05 daily wage rates varied between Rs. 25 to 30 for 9.5 hours of work (from 9am to 6.30 pm).

Cottonseed wages have risen for several reasons. One is that wages in cottonseed cultivation have risen in line with the general inflationary increase in wages for agricultural labour outside of cottonseed production. If we look at female wages for field work we see they have risen between 15.6% and 21.2% (an average of 18.4%).

Table 3: Average Female Wages Per Hour In Non-Cottonseed Agricultural Field Work In Kurnool And Mahaboobnagar 2002-2004 (amount in Rs.)

	2002	2003	2004	Total rise from 2002-2004
Kurnool	3.3	3.7	4.0	0.7 (21.2%)
Mahaboobnagar	3.2	3.2	3.7	0.5 (15.6%)

Thus one reason for rising cross-pollination costs is that some parents of child cottonseed workers, conscious of the wage rises outside of cottonseed production, negotiate higher payments at the beginning of the season in line with the faster rising wage increases outside of cottonseed production in these districts. Of course such a negotiation is not always possible, especially when the wage payment is in the form of a loan (see below).

Workforce Restructuring

However, an even more direct influence on rising wages and on the rise cross-pollination costs in cottonseed is the result of some replacement of child labour with more expensive adult labour. The estimates presented in Table 4 below indicate the daily use of labour for cross-pollination activity for one acre. We find that the use of adult hired labour has nearly doubled since 2002, rising from 1.74 to 3.66 (+1.92; a 110% rise) persons per acre since 2002. Adult hired labour has increased mostly at the expense of child hired labour (-1.33; or 24% fall) and partly at the expense of a fall in family labour (both child and adult, the combined fall is -0.13; or 13.1% fall). Together these three categories (child hired labour, adult family labour and child family labour) account for a fall of 1.46. So how is it possible that adult labour has risen 1.92 person per acre? *This rise is the result of a rise in total labour needed overall (+.46 per acre).*

Thus in sum, the substitution of child and family labour for more adult paid labour has:

1. pushed up average wages because adults are paid more than children;
2. increased total labour required because children and family labourers work longer hours per day than adult labourers do.

In short the switch to adult labour involves not only a rise in wages, but also a rise in adults needed to make up for hours lost through shorter days.

Table 4: Workforce Composition per Acre Per Day: Adult vs. Child and Hired vs. Family Labour from 2002-2004

	2002	2003	2004	Change from 2002-2004
Adult Hired Labour	1.74 (18.9%)	2.48 (26.3%)	3.66 (38.2%)	1.92 (+110%)
Child Hired Labour	5.40 (58.8%)	4.91 (52.1%)	4.07 (42.5%)	-1.33 (-24.0%)
Adult Family Labour	1.17 (13.7%)	1.22 (12.9%)	1.11 (11.6%)	-0.06 (-5.1%)
Child Family Labour	0.88 (9.6%)	0.78 (8.2%)	0.81 (8.4%)	-0.07 (-8.0%)
Total	9.19 (100.0%)	9.39 (100.0%)	9.65 (100.0%)	+0.46 (4.2%)

Note: The estimates indicate the daily use of labour for cross-pollination activity for one acre. The duration cross-pollination activity is three to four months.

Note that most child labour is hired, not family labour, a point often argued by the seed industry.

To sum up thus far, cross-pollination costs have risen 25.5% over the past three years for two main reasons:

1. Wage inflation: wages in cottonseed production have increased by 16% in line with inflationary wage increases in agricultural field work outside of cottonseed production, and
2. Workforce restructuring: there has been a substitution of child workers and family workers for paid adult labour. This substitution has increased wages further as well as increased total labour required.

Estimation of the Cost of Substituting Child Labour with Adult Labour 2002-04

If one assumes that 16% of the rise in wages would have occurred regardless of the substitution, then one could estimate that the remaining 9.5% (25.5%-16%) was the direct result of the substitution of adult for child labour. Thus farmers spent an average of Rs. 5959 per acre more on cross-pollination costs in 2004 than they did in 2002, of which Rs. 3746 is due to 16% increase wages and remaining 9.5% or Rs. 2213 is the direct result of substitution of adult for child labour.

Whilst this is a useful estimate, we think this underestimates the true cost of the substitution, because wage rises outside of agriculture are likely to be much more responsive to supply and demand pressures than within cottonseed production, where the wage rises are marked by more stickiness upwards⁷. Hence some of what we attributed to wage inflation (16% rise) may instead be a product of this substitution.

⁷ Compared to cottonseed wages, other local agricultural labour markets wages are comparatively more open and responsive to wage bargaining, especially in Kurnool where there is plenty of high wage agricultural employment enabling workers to bargain for higher wages and better conditions. However, bargaining for higher wages in cottonseed based on child labour is less responsive to these outside wages increases than in agriculture based solely on adult labour. This is because any bargaining for higher wages must be done by parents on behalf of child workers. In Kurnool, wages are paid in advance early in the season directly to the parents. For many parents, this wage advance is in fact a loan, usually for some pressing need such as food or medical expenses. Thus these parents are not in a position to bargain hard for higher wages. Moreover, there is

Teenagers and Low Hourly Wages

This retrospective estimation does not give a good indication of the comprehensive costs of replacing child with adult labour because in 2004 approximately 70% of the 'adults' are in fact teenagers between 15 and 18 years. The remaining 30% are adults over 18.

Teenagers in the age group of 15 to 18 years were categorized as 'adults' by our farmer employers respondents who wished to subvert child labour laws by claiming to employ adults at what appears to be adult daily/monthly wages. They were so convincing that even our field investigators categorized these teenagers as adults. However, hourly wages of teenagers were indeed lower than adults over 18 because the former regularly worked longer hours and were found to be subjected to the same type of control that children worked under, including increased work intensity, verbal and physical abuse and exposure to pesticides. These oppressive conditions are designed to get a higher work output for less payment. Adults over 18 - with access to outside higher wage opportunities - would not accept and indeed do not put up with such conditions (see Venkateswarlu, D. and L. da Corta, 2001).⁸ Most of these teenagers worked for these employers when they were younger – the older child group fell by 7.9% in line with the rise in teenagers by 7.9%, see Table 5 below.

Table 5: Proportions of Young and Older Children and Teenagers and Older Adults in Cottonseed Production 2002-04

	2002	2003	2004	Rise or fall since 2002
Young Children under 12	30%	25%	20%	-10%
Older Children 12-14	38.4%	35.3%	30.5%	-7.9%
Teenagers 15-18	26.6%	30%	34.5%	+7.9%
Adults 18+	5%	9.7%	15%	+10%
	100%	100%	100%	

If we look at monthly and daily wages for each group of 'adults' - teenagers and adults over 18 - we see that they are paid the same in each year. However, when we look at hourly wages we see that the hourly wage for teenagers is lower than that of adults over 18, because teenagers work longer hours.

In Kurnool, teenagers work 13 hours, the same as the child group, whereas adults over 18 work for only 11.5 hours. The hourly wage for teenagers in 2004 is Rs. 3.6; whereas the

not much alternative paid employment available for young girls. When wages are in fact a loan to parents for a pressing need, it may be difficult nigh impossible for parents to threaten not to send children to the fields if wages don't rise. Mid-season or harvest bargaining, which can be very effective in other agricultural work, is similarly difficult when wages are paid in advance. This downward pressure on wages is very typical of attached and bonded labour arrangements in Indian agriculture.

⁸ See Venkateswarlu, D and L. da Corta (2001) 'Transformations in Age and Gender of Unfree Workers on Hybrid Cottonseed Farms in Andhra Pradesh' *Journal of Peasant Studies*, Vol. 28, No. 3.

hourly wage for adults is Rs. 4.0 (the same as it is for female adults outside of cottonseed). Similarly the hourly wage for teenagers in Mahaboobnagar is below the wage for adults over 18, which was Rs. 2.9 in 2004, whereas the adult wage is Rs. 3.4, much closer to Rs. 3.7, the hourly wage for adults outside of cottonseed production.

Table 6: Hourly Wages in Rupees for Adults, Teenagers and Children in Kurnool District 2002-04

	2002	2003	2004	Female Adult Wage Outside Cottonseed
Children	2.7	2.9	3.2	
Teenagers (15-18)	3.1	3.3	3.6	
Adults (over 18)	3.5	3.7	4.0	4.0

Table 7: Hourly Wages in Rupees for Adults, Teenagers and Children in Mahaboobnagar District 2002-04

	2002	2003	2004	Female Adult Wage Outside Cottonseed
Children	2.1	2.2	2.4	
Teenagers (15-18)	2.5	2.7	2.9	
Adults (over 18)	2.9	3.2	3.4	4.0

Average Cottonseed Wages vs. Wages Elsewhere in Agriculture

Unfortunately, the upward pressure on cottonseed wages through the inclusion of adults did little to equalise average wages in cottonseed (an average of the child, teenage and adult wages) with outside wages for adult men and women in other agricultural work: even in 2004 average cottonseed wages were below wages in other agricultural activities.

Table 8: Average per Hour Wages in Rupees in Cottonseed and other Agricultural Operations in Kurnool

Year	Wages in cottonseed	Other operations	
		Female	Male
2004	3.6	4.0	7.3
2003	3.3	3.7	6.8
2002	3.1	3.3	6.3

In Kurnool, in 2004 hourly wages for all workers in cottonseed are Rs. 0.4 (11%) below female wages and Rs. 3.7 (103%) below male wages in other agricultural operations. *In other words, hourly wages in cottonseed are less than half male wages in other operations⁹.*

⁹ There is an important gender division in wage rates. Women's wages are far below men's and this is part of the reason why employers seek out female children and adult females – they are much cheaper. Whilst there is little or no difference between wages for adult men and women if they do the same activity, they rarely do the same activity – traditionally, women do certain agricultural works, men do others. We found in an earlier study in Andhra Pradesh that over the last 20 years this traditional gender division of labour changed substantially to suit employers - much of 'joint male/female work' in paddy and groundnut cultivation has become largely feminized – thereby cheapening labour costs. Employers in cottonseed build on this trend, choosing female children, teenagers and adults in order to keep labour costs down (Da Corta and Venkateswarlu (1999), *Journal*

Table 9: Average per Hour Wages in Rupees in Cottonseed and other Agricultural Operations in Mahaboobnagar

Year	Wages in cottonseed	Other operations	
		Female	Male
2004	2.9	3.7	6.5
2003	2.7	3.2	5.9
2002	2.5	3.2	5.7

In Mahaboobnagar, in 2004 hourly wages for workers in cottonseed are Rs. 0.8 (27.6%) below female wages and Rs. 3.6 (124%) below male wages in other agricultural operations. Hourly wages in cottonseed are once again less than half male wages in other operations. *These low average wages in cottonseed production represent the very real advantage to employers to continue to employ children (under 14) and teenagers rather than female adults (18+) or male adults.*

Summary

To sum up thus far, cultivation costs rose 14.6% over the period (2002-4) attributable partly to the rise in input costs (rent, pesticides) but also largely due to the rise in labour costs, chiefly cross-pollination costs, which have risen 25.5% over the period. Cross-pollination costs rose as a result of the substitution of paid child labour and family labour for paid adult labour. Using hourly wages, we showed the impact of this substitution was not merely in increasing wages, but because paid adults work much shorter days than children (and family workers), it has increased labour required which further increased labour costs. We estimated that out of the Rs. 5959 average cost rise in cross-pollination costs per acre, Rs. 3746 is due to the 16% increase in wages and remaining 9.5% or Rs. 2213 is the direct result of substitution of adult for child labour.

We also argued that before getting too optimistic about these early stages of the switch to adult labour, one must bear in mind several issues:

1. 70% of 'adult' labour in cottonseed production are teenage (15-18 year old) workers who were probably kept on from when they were younger and who continue to work longer hours for a lower hourly wage than those adults over 18.
2. The upward pressure on cottonseed wages through the substitution of child for adult labour did little to equalize *average* wages in cottonseed with outside wages: even in 2004 cottonseed wages were below wages in other agricultural activities¹⁰.

Finally, as we discuss below, the rise in costs associated with this partial substitution of child for adult labour may be difficult for employers to bear in the future because the rise in costs of cultivation have been accompanied by declining/fluctuating output. This puts pressure on

of *Peasant Studies*, Vol. 26, Nos. 2 and 3. Also published in T.J. Byres, Karin Kapadia and Jens Lerche (eds.) *Rural Labour Relations in India*, London: Frank Cass Publishers.

¹⁰ Because in an open fully functional labour market, wages should equalize between different agricultural crops, however, because in cottonseed children and teenagers work alongside adults, child and teenage wages are averaged in with the adult wage, pulling the average wage in cottonseed down, below the adult wage in non-cottonseed local agricultural field work.

profits and hence the ability to make further substitutions without a substantial rise in procurement price. We discuss changing output and profits below.

Fluctuating Output, Income and Profits: 2002-04

Table 10 shows that per acre income rose slightly from Rs. 78,774 in 2002 to 80,495 in 2003 (Rs. 1721 or +2.2%) but then fell dramatically in 2004 (from Rs. 80,495 in 2003 to Rs. 64,366 in 2004 or -20.0%) as a result of a pest attack which reduced output.

Table 10: Per Acre Income in Seed, Lint and Commercial Cotton 2002-04 (amount in Rs.)

	2002	2003	2004
Seed	67,076	67,030	56,288
Lint	7,849	8,940	4,851
Commercial cotton	3,849	4,525	3,227
Total	78,774	80,495	64,366

A further challenge to income came from price shifts, whilst seed price rose somewhat (+18, 8.5%) lint price fell a dramatic 30% and commercial cotton fell 6.5% over the period 2002-04. The rise in seed price did not keep up with inflation in wages: it was about one-half that of wage inflation (16.4%).

Table 11: Average Prices for Seed, Lint and Commercial Cotton 2002-04 (amount in Rs.)

	2002	2003	2004	Change 2002 to 2004
Seed price (750 gram packet)	211.0	218.7	229.0	+18 (8.5%)
Lint price (Kg)	49.1	55.9	34.0	-15 (-30%)
Commercial Cotton (Kg)	17.1	18.9	16.0	-1.1 (-6.5%)

Note: During 2004-05 the initially agreed procurement price of per packet seed (750 grams) of proprietary research hybrids of different seed companies varied between Rs. 215 to Rs. 225. In February 2005 cottonseed farmers in Kurnool agitated over procurement prices and demanded for hike in prices. Seed companies agreed to pay Rs. 10 extra on each packet of seed.

Since 2002, there was a 14.6% rise in costs, yet a fall in income by 18.2% resulting in more than 100% collapse in profits (which fell to -3.3% of income, so farmers lost money in 2004). This fall in profits occurred because of the massive pest attack in 2004 together with the rise in cultivation costs – labour and non-labour costs – as discussed above.

Table 12: Costs, Income and Profit per Acre over the Period 2002-04 (Amount in Rs.)

	2002	2003	2004	% change 2002-2004
Costs	53,024	62,784	66,522	+8,498 (+14.6%)
Income	78,703	80,495	64,366	-14,337 (-18.2%)
Profit or loss (% of income)	20,679 (26.3%)	17,710 (22.0%)	-2,156 (-3.3%)	Fell by 22,835 (fell more than 100% since 2002) Average profit over 3 years=15.0%

Big and Small Farmers

Smaller farmers seem to produce slightly higher output per acre, via greater intensity of labour input producing higher yields, leading to slightly greater income per acre in each year. However this did not translate to higher profits because small farmers' costs are much higher than big farmers' costs. The tables below show that in all 3 years the profits of small farmers are less than that of big farmers.

Table 13: Costs, Income and Profit per Acre over the Period 2002-04: Small Farmers* (amount in Rs.)

	2002	2003	2004	% change 2002-2004
Costs	59,657	63,532	68,748	+9,092 (+15.2%)
Income	79,225	80,538	65,411	-13,814 (-17.4%)
Profit or loss	19,568	17,005	-3,337	-22,905 (-117.1%)

* Small farmers are defined as cultivating less than two acres of cottonseed and big farmers defined as those cultivating 2 acres and above (not included other area owned or cultivated by farmers).

Table 14: Costs, Income and Profit per Acre over the Period 2002-04: Big Farmers (amount in Rs.)

	2002	2003	2004	% change 2002-2004
Costs	56,942	62,067	65,463	+8,521 (+15.0%)
Income	79,186	79,163	63,802	-15,384 (-19.4%)
Profit or loss	22,243	17,096	-1,660	-23,903 (-107.5%)

Compared to big farmers, smaller farmers spent a great deal more on per acre input costs, irrigation, interest payments, spraying and a little more on each of the other non-labour expenses (reflecting the economies of scale of larger farms). Whilst smaller farmers pay less in family labour costs, their paid out labour costs rose from 60% of costs in 2002 and 2003 to 70% in 2004. This increase in paid labour was due to a reduction in family child labour. This analysis suggests that small farmers have no necessary advantage vis-à-vis big farmers. Small farmers are not in a better position to substitute adult for child labour despite their greater tendency to use family labour.

Of particular interest are the high interest payments of smaller farmers. Seed companies/organizers advance 30 to 45% of capital to the farmers with interest charges at 24% per year (they lend Rs. 20,000 to 25,000 per acre). The remaining capital (55 to 70% of total

capital) is managed by farmers themselves either through bank loans (at 12%), local moneylenders (at 24%) or with own capital.

The table below shows that smaller farmers borrow much more from seed companies and moneylenders (65% of capital used is charged at the higher 24%) than big farmers, who borrow merely 30% of their capital at the higher 24% interest rate.

Source (Interest Rate)	Small Farmer	Big Farmer
Seed Companies/organizers (24%)	45%	30%
Banks (12%)	15%	20%
Own Capital (12%)*	20%	50%
Money Lender (24%)	20%	--

* We used the bank rate for 'own capital' because it represents the opportunity cost of not having invested it in the bank.

Table 15: Per Acre Interest Payments for Small and Big Farmers (amount in Rs.)

	2002	2003	2004
Small Farmer	6800	7300	7600
Big Farmer	5200	5700	6000

This interest expense may impel farmers to push down labour costs as low as possible in good years knowing that in bad years (pest attacks) they will rack up huge debts. *One thing companies can do in addition to raising procurement prices is to half the interest charged on loans, to fall in line with interest charged on bank loans.*

Regional differences

Kurnool farmers' costs are lower than those of Mahaboobnagar's farmers largely because Kurnool farmers spend less on irrigation (Rs. 1700 less), seed processing (Rs. 400 less), interest (Rs. 300 less), and use fewer workers (8.92 vs. 9.7 per acre). The reasons for this lie in the fact that Kurnool farmers are mostly big farmers - profiting more from economies of scale - whereas most Mahaboobnagar farmers are small - with higher costs. Despite the much higher costs in Mahaboobnagar, the farmers there also have a much better income than Kurnool farmers in each year and have a higher seed output. And so overall, the net income (profit) is only marginally different between the two regions.

Table 16: Costs, Income and Profit per Acre over the Period 2002-04: Kurnool (amount in Rs.)

	2002	2003	2004	% change 2002-2004
Costs	56,856	61,038	64,874	+8,018 (+14.1%)
Income	77,422	79,600	62,188	-15,234 (-19.6%)
Profit or loss (% of income)	20,565 (26.6%)	18,562 (23.3%)	-2,685 (-4.3%)	Fell by 23,250 (fell more than 100% since 2002) Average profit over 3 years = 15.2%

Table 17: Costs, Income and Profit per Acre over the Period 2002-04: Mahaboobnagar (in Rs.)

	2002	2003	2004	% change 2002-2004
Costs	60,421	66,119	70,978	+10,557 (+14.6%)
Income	81,690	82,720	69,956	-11,734 (-14.4%)
Profit or loss (% of income)	21,269 (26.0%)	16,601 (20.0%)	-1021 (-1.5%)	Fell by 22,290 (fell more than 100% since 2002) Average profit over 3 years = 14.8%

There are also interesting differences in labour use processes: Kurnool farmers pay labourers by the month in advance, they use more migrant labour, they have higher wages overall, and use fewer days in cross-pollinating (perhaps because they work much longer hours in each day 13 vs. 9.5 in Mahaboobnagar). Despite these differences, profits as a percentage of income are remarkably similar between the two regions, averaging 15.2% in Kurnool and 14.8% in Mahaboobnagar.

Summary

Though farmers have what appear on the surface to be a reasonable profit in 2002, over the three year period profits have declined attributable to a threefold assault on profits: rising costs, falling or variable output, and low or falling buying prices. Firstly, costs have risen, both non-labour costs (like rent and inputs such as pesticides, fertilizers and interest) and labour costs. Labour costs rose way above inflationary wage rises as a consequence of the pressure to substitute child with adult labour. Secondly, this rise in costs took place within the context of variable and falling output due to periodic pest attacks. Thirdly, buying prices have fallen or not kept up with inflation: the buying price of lint fell 30% and the buying price of commercial cotton fell 6.5% since 2002. And whilst the seed price rose 8.5%, it was only ½ of wage inflation (16.4%) and far below the 25.5% rise in cross-pollination costs. All these factors, coupled with debt racked up during bad years, put pressure on farmers to take a very conservative view on substituting cheap child for more expensive adult labour. It also encourages them to flout labour laws by hiring children and teenagers who work longer hours, work more intensively and who are easier to discipline and to control than adults over 18. Smaller farmers, despite their higher output in each year due to greater intensity, were crushed by higher costs, especially interest payments, and this showed up in their profits which were lower than big farmers.

In sum, over the period 2002-04, we have identified:

- (i) Rising labour and non-labour input costs,
- (ii) Fluctuating output,
- (iii) Falling or slow rising prices for lint, cotton and cottonseed.

Given this costs-output-prices squeeze on their profits, employers may find it much more difficult to substitute child for adult labour. In the next section we estimate the true cost of replacing child labour fully in the current price climate. We argue that in order to finance this substitution, seed companies should raise procurement prices.

SECTION-III

COST IMPLICATIONS OF REPLACING CHILD LABOUR WITH ADULT LABOUR

Everyone agrees about the need to replace child labour with adult labour, especially in the context of adult unemployment. However there are very different views about how much this replacement is going to cost and who is going to pay for it. What is the price of replacing child labour in cottonseed - or in other words - what is the price of child freedom from labour and who is going to bear it - farmers, consumers, or the companies?

There are two views. On the one hand, seed companies argue that since farmers have good profit margins under the current procurement price, that farmers should bear these costs entirely on their own. The child rights advocacy groups and farmers' organizations, on the other hand, argue that with the current procurement prices of companies, seed farmers cannot afford to pay better wages to the labourers and still make adequate profits which would enable them to continue cultivating cottonseeds. Unless better wages are paid, farmers would not be in a position to attract adult labourers to work in their fields in sufficient numbers. Ironically, this argument is often also adduced in order to justify the use of child labour in cottonseed production - it is highly cost effective. The implications of this argument are that replacement of child labour with adult labour would involve substantial increase in production costs and would require a significant rise in the market prices of seeds. Proponents of this view argue that compared to ordinary seeds, the price of hybrid seeds on the market is already very high and therefore that a further rise in the price of hybrid seeds would price them outside the reach of small and marginal farmers, who are already burdened with an increase in the costs of other inputs. In this section we attempt to estimate the cost of replacing child labour with adult labour. We then investigate how this cost would influence different players in the cottonseed business: (a) farmers' profits, (b) the seed prices faced by consumers and (c) the profits of seed companies.

Estimation of the Cost of Substituting Child for Adult Labour

The replacement of child labour with adult labour is costly because child wages are so much lower than adult wage (both adult wages within cottonseed as well as outside the cottonseed sector). Moreover, farmers can squeeze out higher productivity from children per day: children will work longer hours, will work much more intensively (particularly in cross-pollination) and they are generally much easier to discipline compared to adult workers, whether through inexpensive treats or through verbal or physical abuse. In short, the switch to adult labour involves not only a rise in wages, but also a rise in number of adults needed to make up for hours lost through shorter days and lower productivity. Below we present estimates of the costs of replacing child labour 100% with adult labour. We use two different methods. Method 1 uses costs data on the partial replacement of child labour which has taken place from 2002-04 - we then use this data to project forward what a 100% substitution of child labour would amount to - we label this the retrospective

estimation. The second estimation method - labelled the commensurate wage estimation - relies on wage differences between child and adult labour in cottonseed vs. wages outside based on the assumption that farmers must attract adult labourers to the cottonseed fields with wages (and conditions) commensurate with fieldwork off cottonseed fields. Method 2 also uses data the additional labour required on adult farms vs. that needed on combined child/adult farms.

Method 1: Retrospective Estimation of the Cost of a Complete Substitution of Child for Adult Labour

The analysis of trends in cultivation costs, workforce composition and wage structure over 2002-04 presented in section-II clearly indicates that the changes in workforce composition and wage structure have a significant bearing on the total cost of cultivation. In section-II we estimated the increase in cost derived from the partial replacement of child labour with adult labour in the survey region from 2002/3 to 2004/5. There we explained that the rise in labour costs is almost entirely down to the rise in cross-pollination costs which rose from Rs. 23,306 to Rs. 29,239 per acre per season (Rs. 5934 or a 25.5% rise over the 3 years). Cross-pollination costs rose because of

1. a rise in cottonseed wages by 16%¹¹ in line with inflationary wage increases in agricultural field work outside of cottonseed production, and
2. the replacement of some child labour with adult labour - which both pushed up wages further as well as increased total amount of labour required.

In section-II we argued that out of the 25.5% rise in costs, if one assumes that 16% of the rise in wages would have occurred regardless of the substitution, then one could estimate that the remaining 9.5% (25.5-16.4) was the direct result of the substitution of adult for child labour. Thus we found that farmers spent an average of Rs. 5959 more on cross-pollination costs in 2004 than they did in 2002, of which Rs. 3746 is due to a 16% increase of wages and remaining 9.5% or Rs. 2213 is the direct result of substitution of adult for child labour.

Rise in Adult Labourers Calculation - In order to calculate the cost of a 100% replacement of adult with child labour, we must first look back at Table 4 in section-II which is summarised in the table below. We first need to estimate the additional labour needed when we replace child labour 100%. We calculate that since a fall of 1.4 child labourers is equivalent to an extra 0.46 adult labourers, a further fall of 4.88 child labourers is associated with a $3.5 \times 0.46 = 1.61$ **rise in labourers needed per acre per day – this is 17.5% more labourers when compared to the 2002 total requirement.** This rise would bring total labour required up to 11.26 (9.65 +1.61 = 11.26). So we now can estimate a projected 100% decline in child labour.

¹¹ The average hourly wage rates increased in Kurnool by 16.1% and in Mahaboobnagar by 16% during 2002-04.

Summary of Table 4: Work Force Composition Per Acre Per Day: Adult and Child Labour (Paid and Family) From 2002-2004 - Projected 2005

	2002	Change	2004	Change	Projected 2005 – 0% Child Labour
Child Labour (Paid and Family)	6.28 (68.3% of workforce)	-1.4 (-fall in 17.7 percentage points) (22.3% fall from 2002)	4.88 (50.6% of workforce)	-4.88 (needed fall in 50.6 percentage points) (100.0% fall from 2004)	0 (0%)
Adult Labour (Paid and Family)	2.91 (31.7% of workforce)	+1.86 (+rise in 17.7 percentage points) (20.2% rise from 2002)	4.77 (49.4% of workforce)	+6.49 (need rise in 49.4 percentage points) (100.0% rise from 2004)	11.26 (100.0%)
Total	9.19 (100.0%)	+0.46	9.65 (100.0%)	+1.61	11.26 17.5% more labourers than in 2002

In the table above we can see that the proportion of adult labour (both paid and family labour) in the total workforce rose from 2.91 persons per acre per day, or 31.7% of the workforce, in 2002 to 4.77 persons per acre per day or 49.4% of the workforce in 2004 (a rise of +1.86 persons per acre per day, or a rise in 17.8 percentage points. The rise in 1.86 adults per acre per day over the period 2002-04 cost farmers an additional Rs. 2213. **In order to replace all child labour, it would require a further rise of 6.49 persons per acre per day. This rise in 6.49 adults per acre per day is associated with a rise in Rs. 7723.** (This is because $6.49/1.86 = 3.48$ and so $Rs. 2213 \times 3.48 = Rs. 7723$). Thus farmers would need to pay an additional Rs. 7723 (in addition to the extra Rs. 2213 already paid). Moreover, one should add 8% on for wage inflation each year (e.g. 2005 + wage inflation would be Rs. 8340; and by 2006 it would be Rs. 8959¹²). Such wage inflation is highly likely because (a) unlike children, adults have outside wage opportunities and are therefore much more likely to bargain harder for higher wage and (b) farmers will need to

¹² Fall in Child Labourers Calculation: Another way to estimate the same thing is to examine the fall in child labourers per acre per day. In the table above we can see that the proportion of child labour (both paid and family labour) in the total workforce declined from 6.28 persons per acre per day, or 68.3% of the workforce in 2002 to 4.88 persons per acre per day or 50.6% of the workforce in 2004 (a fall of 1.4 persons per acre per day, or a fall of 17.7 percentage points). A fall of 1.4 child labourers per acre per day is associated with a rise of Rs. 2213 in total labour costs. A reduction in 4.88 child labourers per acre per day is necessary in order to reduce child labour to 0. This fall in 4.88 is associated with a rise in Rs. 7723. (This is because $4.88/1.4 = 3.49$ and so $Rs. 2213 \times 3.48 = Rs. 7723$). This is the same result we obtained above. Again one should add 8% on for wage inflation each year (e.g. 2005 + wage inflation would be Rs. 8340; and by 2006 it would be Rs. 8959).

attract adults from higher wage work outside of cottonseed, thereby pushing up cottonseed wages (this second assumption is the basis of Method 2 below).

Method 2: Commensurate Wage Estimation of the Cost of a Complete Substitution of Child for Adult Labour

A superficial analysis of wages show that *daily* wage rates paid to both children and adults in cottonseed work are not far below local *daily* wages for other agricultural fieldwork. However, when one considers the long work days in cottonseed sector, one finds that *hourly* wages are significantly below the market wages. Average hourly cottonseed wage is Rs. 3.25 whereas average hourly wage in local agricultural work is 3.8 for women.

Moreover, *within* cottonseed farms the *hourly* wage difference between child and adult is high because of the long days worked by children: the average hourly wage for a child is Rs. 3.1 where as adult labour is paid Rs. 3.4.

Average Wages within and outside cottonseed: Average between Kurnool and Mahaboobnagar 2004

		Necessary Rise
Child Wage - within cottonseed	3.1	would need to rise .7 or 22.6%
Adult Female Wage – within cottonseed	3.4	Would need to rise .4 or 11.8%
Adult Female Wage – non-cottonseed market rate	3.8	

Using Method 1 we may have underestimated the full cost of replacement of child labour, because adult labour would need to be drawn in from non-cottonseed areas. This suggests that we should use not the Rs. 3.4, but the higher Rs. 3.8 wage which exists outside cottonseed in these regions.

Compared to adult female market wages outside cottonseed farms, the wages paid to children in cottonseed farms are 22.6% below such market wages and wages paid to adult labour in cottonseed are 11.8% below market wages. If farmers want to attract enough adult labourers to their fields, then, farmers need to raise wages to the higher market wage level.

Our Summary Table 4 (above) indicates that in 2004 children account for 50.6% of the total workforce and remaining 49.4% are adults. The total average cost of cross-pollination per acre in 2004 is Rs. 29,239, out of which 50.5% was paid to children (Rs. 14,766) and 49.5% to adults (Rs. 14,473). A 22.6% increase on child wage payment (Rs. 14766) equals Rs. 3334; an 11.8% increase on the adult wage payment (Rs.14473) equals Rs. 1703. Thus the total increase in cost is (Rs. 3334 + Rs. 1702) = Rs. 5036.

The substitution of children with adults would also involve in additional labour. Analysis of labour data on farms using completely child labour and farms using completely adult labour indicates that farms using completely adult labour are using 20% additional labour. In farms

using completely child labour the daily cross-pollination work is managed by 10 children whereas in farms using completely adult labour this work is managed by 12 persons (**note that this 20% figure is very close to the figure obtained in Table 4, 17.5% additional labour than in 2002**).

- Additional labour requirement to replace 50.5% child labour results in 10% increase in labour requirement.
- 10% additional labour costs = Rs. 2924.

Thus the total substitution costs = Rs. 5046 + Rs. 2924 = Rs. 7970

To sum up, using retrospective data we estimated the amount of substitution costs as Rs. 7723. Using wage and work output data we estimated this figure as Rs. 7970. Though both the methods are useful for estimating the costs the method of using wage and work output variations data is more valid because retrospective data underestimate the true cost of the substitution to some extent. For the purpose of analysis in the present study we use the estimation figure of Rs. 7970 derived through wage and work out variations data.

Estimation of the Necessary Rise in Procurement Price

The additional amount of Rs. 7970 raises the total cost of production by 12% and cost of production of per Kg seed by Rs. 37¹³. **In order to cover this additional amount Rs. 7970, a 12% increase over present procurement price is required.** During 2004-05 seed companies paid Rs. 305 (Rs. 229 per 750 gram packet) on each kg of seed and this would increase to Rs. 342 (Rs. 256.5 per 750 gram packet) if adult market wages are applied.

Additional Costs if Official Minimum Wages are Applied

The above estimates are calculated on the basis of prevailing market wages. As we already reported in section-II the wages paid to labourers in cottonseed as well as local market wages in outside cottonseed farms are far below the official minimum wages specified by the government. Under The Minimum Wages Act 1948 the Andhra Pradesh Government in 2002 fixed the daily minimum wages to be paid for unskilled wage labour in agricultural sector at Rs. 52. If farmers have to comply with the official Minimum Wages Act the cost production will increase significantly. Currently the average daily wage rate in cottonseed farms is only Rs. 28. If minimum wages are applied the labour costs for cross-pollination will increase by 85.7% (from Rs. 29,239 to Rs. 54,300).

The additional amount needed to cover minimum wages for all labour needed for one acre per season is Rs. 25,061.

¹³ The average seed yield over the period 2002 to 2004 is 217.5 Kg per acre. Average cost of per Kg seed is Rs. 236. Rs. 7970 additional costs will increase the per kg seed production by Rs. 37.

The additional amount of Rs. 25,060 raises the total cost of production by 38.9 % and cost of production of per Kg seed by Rs. 115.5. In order to cover this additional amount of Rs. 25,060, a 37.7 % increase over present procurement price seed is required. During 2004-05 seed companies paid Rs. 305 (Rs. 229 per 750 gram packet) on each kg of seed and this would increase to Rs. 420.5 (Rs. 315 per 750 gram packet) if minimum wages are applied.

Difference between Procurement and Market Prices

The difference between the procurement prices of the companies and the price at which they sell in the open market is significant. Table 18 indicates that what companies pay to the farmer for producing the seed is several times less than what they receive by selling the same seed in the market. The table also presents the difference between cost of production, procurement and market prices. Cottonseed trading is clearly highly lucrative: depending upon the type of hybrid seed the difference between procurement prices and market prices of seed varied between 3.6 to 12 times. Currently three types of cotton hybrids are produced and sold in the market i.e non-BT hybrids, official BT hybrids and unofficial BT hybrids. The government of India so far gave legal permission for market BT cotton hybrids to only few companies. These companies are [REDACTED]. [REDACTED] has patent rights over BT gene and it has sublicensed its gene to other companies. [REDACTED] collects huge amounts of money as a royalty from these companies. Official BT cotton hybrids are those approved by the government. In addition to officially approved BT cotton hybrids there are several BT cotton hybrids which are illegally produced and sold in the market. Unofficial BT cotton hybrids are those which do not have official permission for production and marketing. There are several unorganized sector players who are involved in production and marketing of these illegal BT cotton hybrids. Companies involved in production and marketing of non-BT hybrids sell the seed at 3.5 times higher amount than what they pay to farmers (procurement price is Rs. 293 whereas marketing price is Rs. 1055). Compared to non-BT hybrids, the gap between procurement price and marketing prices of BT hybrids and unofficial BT hybrids is huge. Marketing prices are 12.1 times more in case of official BT (procurement price is Rs. 293 whereas marketing price is Rs. 3555) and 4.5 times more in case of unofficial BT hybrids.

Though companies obtain huge earnings from selling seed, they do not seem to be making any rational calculation about the cost of cultivation when fixing the procurement price to be paid to their seed farmers. With the current procurement prices of the companies, seed farmers are forced to minimize wages to the labourers. Unless better wages are paid, farmers cannot attract adult labourers to work in their fields.

Table 18: Per Kg Average Cost of Production, Procurement and Marketing Prices Of Different Proprietary Cotton Hybrid Seeds Over 2002-03 to 2004-05 (amount in Rs.)

Type of Seed	Cost of the Production For Farmers	Procurement Price Paid by the Companies to the Farmers	Seed Organizers Commission Charges	Market Price*	Multiple of Procurement Price
Non-BT hybrids	236	293	20	1055	3.6 times
Official BT hybrids	236	293	20	3555	12.1 times
Unofficial BT hybrids	236	293	-	1333	4.5 times

* Actual price at which company dealers sold seed to consumers in the open market.

Note: While calculating per Kg cost of cultivation of cottonseed the additional output (cotton lint and cotton from male parent) value of Rs. 11,056 is deducted from total cultivation costs. After deducting the income from additional output the total cost of cultivation per acre is Rs. 51,388. Total yield of hybrid seed is 217.5 Kgs.

The government so far gave legal permission to market BT cotton hybrids to only few companies. These companies are [REDACTED]. [REDACTED] has patent rights over BT gene and it has sublicensed its gene to other companies. [REDACTED] collects huge amount of money as a royalty from these companies. [REDACTED] which has used [REDACTED] BT gene in its hybrids pays Rs. 2500 for each Kg of seed it sells in the market as a royalty to [REDACTED]. The market price of [REDACTED] company BT seeds in 2005-06 is Rs. 3890 per Kg.

Effects of the Passing Replacement Costs of Child Labour onto Consumers, Seed Companies and Seed Farmers

The table below presents the rough estimates of the additional costs involved if children are to be replaced with adult labourers. If children are replaced with adult women the total cost of cultivation increases by 12% (Rs. 7970 per acre). A 12% increase in the cost of cultivation means incurring an additional amount of Rs. 37 for production of one Kg seed. The current market price of one Kg seed varied between Rs. 1000 to Rs. 3700 depending upon type of hybrids.

- If the entire burden is shifted on to the *consumer*, the price of per Kg seed in the open market will increase - in the case of non-BT hybrids, by 3.5%; official BT by 1% and unofficial BT by 2.8%.
- If the entire additional burden is shifted on to the *seed companies*, their current profit margins will decline by 1.3% to 6.8% depending upon type of hybrids¹⁴.

¹⁴ For estimating the profit margins of seed companies one needs to examine all the costs incurred by companies - procurement price paid to seed farmers, commissions paid to seed organizers and dealers, company administrative expenses and research costs for developing seeds etc. While the data regarding procurement prices of seed companies are easily available, data for other expenses (administrative expenses, research costs, dealer commissions etc.) are not. While estimating the profit margin of companies Rs. 200 per Kg of the seed in case of non-BT hybrids, Rs. 500 in case official BT hybrids and Rs. 100 in case of unofficial BT hybrids is

- However, if the total additional burden is shifted on to the *seed farmers*, there would be a decline of their profit margin by a massive 64.9%.

Even if the burden was distributed equally between farmers and seed companies, then farmers would suffer disproportionately – a 32.4% fall in farmers' profits, versus merely a 0.6%, 3.4% or 1.9% fall for seed companies.

If minimum wages are paid to all the labourers, then the total cost of production would increase by 37.7% and the cost of production of per kilogram of seed would need to increase by Rs. 115.5.

- If the entire burden is shifted to the *consumer*, the rise in the present market price of one Kg cottonseed is 10.9% in case of non-BT hybrids, 3.2% and 8.6% in case of official BT and unofficial BT respectively.
- If the entire additional burden is shifted on to the *seed companies*, their current profit margins will decline by 4.2% to 21.3% depending upon type of hybrids.
- Yet if the total additional burden is shifted on to the *seed farmers*, their profit margin will disappear and they will have a net loss of 102.6%.

Even if the burden was distributed equally between farmers and companies, farmers would suffer disproportionately, a 32.4% fall in profits versus a 2.1%, 6.1% or 10.6% fall in profits for seed companies.

Table 19: Impact of the Additional Costs Due To Replacement of Child Labour - Effect on the Profit Margins of Seed Farmers and Seed Companies

Name of the player	Present profit margins on per Kg cottonseed	Effect on profit margins if entire burden is shifted	Effect on profit margins if entire burden is equally distributed between companies and farmers
Seed farmer	Rs. 57	64.9%	32.4%
Seed company			
Non-BT hybrid	Rs. 542	6.8%	3.4%
Official BT hybrid	Rs. 2742	1.3%	0.6%
Unofficial BT hybrid	Rs. 940	3.9%	1.9%
If the entire burden is shifted to the consumer, the rise in the present market price of one Kg cottonseed is 3.5% in case of non-BT hybrids, 1% and 2.8% in case of official BT and unofficial BT respectively.			

* The difference between companies' procurement price and market prices of the seed is Rs. 762 per Kg seed in case of non-BT hybrids, Rs. 3262 in case of official BT hybrids and Rs. 1040 in case of unofficial BT hybrids. While estimating the net profit margin of companies Rs. 200 per Kg of the seed in case of non-BT hybrids, Rs. 500 in case official BT hybrids and Rs. 100 in case of unofficial BT hybrids is deducted towards all the expenses incurred by the company - administrative charges, commission given to dealers and research costs incurred for developing seeds etc.

deducted towards the expenses incurred by the company for its administrative costs, research costs and commissions given to dealers. These figures are very broad and rough estimates calculated on the basis of few key informant interviews with persons involved in cottonseed business. These figures may not represent the exact costs of companies' administrative and research costs and commissions paid to dealers but certainly give an idea about these costs. The detailed analysis of seed companies' profits is not the purpose of the present study. Here we are simply making the point that it is plausible that seed companies can afford to raise procurement price by a few rupees given the gap between procurement price and sale price.

Table 20: Impact of the Additional Costs to Cover Official Minimum Wages for All Labourers - Effect on the Profit Margins of Seed Farmers and Seed Companies

Name of the player	Present profit margins on per Kg cottonseed	Effect on profit margins if entire burden is shifted	Effect on profit margins if entire burden is equally distributed between companies and farmers
Seed farmer	Rs. 57	Loss 102.6%	Loss 51.3%
Seed company			
Non-BT hybrid	Rs. 542	21.3%	10.6%
Official BT hybrid	Rs. 2742	4.2%	2.1%
Unofficial BT hybrid	Rs. 940	12.3%	6.1%
If the entire burden is shifted to the consumer, the rise in the present market price of one Kg cottonseed is 10.9% in case of non-BT hybrids, 3.2% and 8.6 % in case of official BT and unofficial BT respectively.			

Thus, farmers would suffer substantially and disproportionately to both consumers and to companies, whether they assumed all or only ½ of the costs of replacing child labour with adult labour. These findings contradict the seed industry argument that seed farmers won't suffer badly from the increased cost of replacing child with adult labour. Moreover, these findings contradict the seed industry argument that the replacement of child labourers with adult labourers would necessarily escalate the prices of seed substantially thereby hurting less well off consumers. Even if the entire additional cost burden were to be shifted entirely onto consumers, a mere 1% to 3.5% hike in the market prices of seed should not affect them in a significant way.

Summary

In this section we estimated the cost of substituting child for adult labour. Using Method 1 - a retrospective estimation - we arrived at a figure of an additional Rs. 7723 needed to cover the additional costs of adult labour. This figure might underestimate the real cost of replacing child labour because wages are stickier within the cottonseed sector. As more and more adults are taken in from outside this sector, wages within the sector are likely to rise much more rapidly.

Using Method 2 - wage and workout variation data - we arrived at a slightly higher figure of Rs. 7970. Note that these figures are for 2004-05, and that for 2005-06 we would need to add an additional 8% for expected wage inflation (based on an average for previous years).

If minimum wages have to be paid to all the workers the additional amount needed is Rs. 25,060 This will raise the total cost of production by 38.9% and cost of production of per Kg seed by Rs. 115.5. In order to cover this additional amount of Rs. 25060, a 37.7% increase over present procurement price is required.

In sum, we estimated that these additional costs would require a 12% to 37.7% (12% if market wages are paid and 37.7% if official minimum wages are paid) increase in procurement price in 2004-05. Seed companies argue that if they pass this rise onto

consumers, that it might hurt poorer consumers, like small farmers. Yet we identified a vast difference between procurement price and market prices (with market prices varying between 3.6 and 12.1 times the procurement price). Furthermore, looking at the effects of shifting the burden of these replacement costs onto consumers vis-à-vis seed farmers vis-à-vis seed companies, we concluded that the rise to consumers would be minimal (1%-3.5%) and the impact on seed companies would be small (profit margins will decline by a mere 1.3% to 3.9% to 6.8% or for minimum wages by a mere 4.2% to 12.3% to 21.3% depending upon type of hybrids). By contrast, the impact of additional costs laid on farmers would vastly reduce their profits 64.9% or even lead to a loss of 102%, if minimum wages are applied.

SECTION-IV

SUMMARY AND CONCLUSIONS

An attempt is made in this study to examine the debate over the issue of relationship between procurement price policy and use of child labour in hybrid cottonseed production in the state of Andhra Pradesh, India. The seed industry argues strongly that employment of child labour in cottonseed production is not linked to the procurement price policy adopted by cottonseed companies. It argues that cottonseed farmers have better profit margins compared to other farmers and that the procurement rates offered exceed the cost of production sufficiently to enable the replacement of all child labour with the employment of adult labour at adult wage rates. In contrast to this view, child rights advocacy groups and farmers' organisations argue that procurement price policy is partly responsible for the extensive use of child labour in cottonseed production. With current procurement prices of companies, seed farmers cannot afford to pay the higher wages necessary to attract adult labour in sufficient numbers and still make reasonable profits. Farmers would certainly not been able to pay the official minimum wage of at least Rs. 52 a day, which makes the seed companies responsible for evading India's minimum wage laws.

In order to address this debate we undertook a detailed study of the costs of cottonseed cultivation, wages, yields, prices and profits. We collected fresh data from 38 villages spread over 10 mandals in Kurnool district and Mahaboobnagar district. These two districts account for nearly 90% of the cottonseed production area in the state. A sample of 100 farmers engaged in cottonseed cultivation during the period 2002-03 to 2004-05 has been selected through a stratified random sampling method.

In section-II we identified the rise in cultivation costs by 14.6% over the period (2002-04). This rise is attributable to the 8.0% rise in input costs (rent, pesticides, fertilizers, interest payments) and to a 22.8% rise in labour costs, composed chiefly of cross-pollination costs which have risen 25.5% (+ Rs. 5959) over the period. Cross-pollination costs have risen as a consequence of wage inflation (16%, Rs. 3746) and as a result of a partial substitution of child labour with adult labour (9.5%, Rs. 2213). The impact of this substitution of child labour with adult labour was not merely in increasing wages, but also - because adults work much shorter days and less intensively than children (and family workers) - it has increased total labour needed per acre by 5%.

From 2002-2004, adult labour per acre increased from 31.7% to 49.5% and child labour fell from 68.3% to 50.5%. We cautioned against getting too optimistic about this partial replacement of child labour with adult labour for two reasons. Firstly, because we found that 70% of 'adult' labour in cottonseed production is comprised of 15-18 year old workers - probably kept on from when they were younger - who work for a lower hourly wage than adults over 18. Secondly, the upward pressure on cottonseed wages through the substitution of child for adult labour did little to equalize *average* wages in cottonseed with outside wages: even in 2004 cottonseed wages were below than wages in other agricultural activities.

Moreover, the increased costs due to this minor substitution of child for adult labour may be difficult for employers to sustain in the future because price-costs-output squeeze experienced by farmers. In addition to the rise in non-labour inputs and labour costs, over the period 2002-04, we identified:

- Fluctuating yields and falling average profits: whilst profits were good in the years 2002 and 2003 (26.3% of income in 2002 and 22.0% of income in 2004) output and profits collapse in 2004 due to a pest attack and lowered the average profit to 15%. There is a substantial variability in yields due to pest attacks, which make it an incredibly risky venture. This variability necessitates huge savings in good years by means of extreme cost cutting exercises in good years - which falls on labour costs.
- Declining profit margins: profits already began to fall 4.3% between 2002 and 2003, chiefly because a rise in costs outlined above.
- Falling or slow rising buying prices: the buying price of lint (fell 30%) and of commercial cotton (fell 6.5%) since 2002. And whilst the seed price rose 8.5%, it was only ½ of wage inflation (16.4%).

All these factors combine to put pressure on farmers to adopt a very conservative view on substituting cheap child for more expensive adult labour. It also encourages them to 'cheat' by hiring more teenagers who work longer hours and who are easier to control than adults over 18.

In the section-III, we estimated the cost of replacing child labour fully in the current price climate. Using wage and work output variation between children and adults we estimated the total cost of replacing children with adult labour as Rs. 7970 per acre. This additional amount raises the total cost of production by 12% and cost of production of per kilogram of seed by Rs. 37. *We estimate that in order to cover this additional amount Rs. 7970, a 12% increase over present procurement price is required.*

If minimum wages have to be paid to all the workers, the additional amount needed is Rs. 25,061. This will raise the total cost of production by 38.9% and cost of production of per Kg seed by Rs. 115.5. In order to cover this additional amount of Rs. 25,061, a 37.7 % increase over present procurement price is required¹⁵.

Who should shoulder the burden of this additional cost? We identified a vast difference between procurement price and market prices (with market prices varying between 3.6 and 12.1 times the procurement price). Looking at the effects of shifting the burden of these replacement costs onto consumers vis-à-vis seed farmers vis-à-vis seed companies, we concluded that the rise to consumers would be minimal (1%-3.5%) and the impact on seed companies would be small (profit margins will decline by a mere 1.3% to 3.9% to 6.8% or for minimum wages by a mere 4.2% to 12.3% to 21.3% depending upon type of hybrids).

¹⁵ The additional costs on account of replacing children with adult labour and paying minimum wages to them can also partly be covered through by taking appropriate measures for improving the productivity of the farms. In recent years the decline in crop productivity is one of the major problems affecting the profitability of farmers in general and cottonseed farmers in particular in the survey area.

By contrast, the impact of additional costs laid on farmers would vastly reduce their profits 64.9% or even lead to a loss of 102%, if minimum wages are applied.

To sum up, procurement price policy is an important contributing factor for large-scale employment of child labour in the cottonseed sector. Unless this issue is addressed other interventions to address the problem of child labour in this sector will not be very effective.

The argument that low procurement price contributes to the persistence of child labour has to be seen in the specific context of recent developments in the industry viz. rising costs and declining yields. Before 2002, farmers employed children in even larger numbers despite the fact that they had a good profit margin. Farmers chose to employ children because they could control them well, pay them little and hence further maximize their profits. Back then, the use of child labour in this industry was not condemned by outsiders or by locals. But now, the situation has changed and farmers are under pressure from various actors (seed companies, NGOs and the Government) to replace child labour with adult labour. *This pressure is coinciding with declining farm income attributable to rising input and labour costs and low and variable output.*

To finance the total replacement of child labour in the cottonseed sector, at least a 12% rise in procurement price is needed (and further 8% rise to meet wage inflation costs yearly) if wages are to be on par with local market wages and thereby attract adult workers. If wages in the cottonseed sector are to be on par with minimum wages then a 37.7% rise in procurement price is necessary. This is not to suggest that once procurement price is increased the problem of child labour will be resolved automatically and farmers will shift to adult labour and pay better wages to the labourers. However, raising the price can at least address a part of the whole problem and other interventions will be more effective once it is resolved.

APPENDIX

Table 1: List of Mandals, Villages and Number of Farms Covered Under Survey

DISTRICT	MANDAL	VILLAGE	NO OF FARMS
Kurnool	Sanjamala	Kanala	4
		Alvakonda	7
		Giddalur	3
		Akkampalli	3
		Muchalapuri	2
	Koilkuntla	Gulladurti	2
		Koilkuktla	1
		Bijinavemula	1
	Gospadu	Ontelagala	5
		Gospadu	5
	Dornipadu	Dornipadu	4
		Chakarajuvemula	3
		Ramachandrapuram	3
	Uyalawada	Kodupalli	2
		Mayalur	3
		Sarvaipalli	2
		Allur	3
		Injedu	1
	Kowthalam	Lingaldinne	2
		Kathrik	2
Mahaboobnagar	Dharur	Marlabeedu	3
		Bureddy Palli	4
		Alapadu	4
		Gangannapalli	4
		Patapalam	1
		Maldakal	Amaravai
	Saddunonipalli		2
	Bijjaram		3
	Elkur		2
	Gadwal	Mallamdoddi	1
		Cherlagarlapadu	1
		Vitalapuram	2
		Uligepalli	1
		Maldakal	4
	Gattu	Gadwal	1
		Gonupadu	1
Total	10	Lingapur	2
		T.P. Morusu	2
		38	100

Table 2: Per Acre Average Cost of Cultivation 2002-03 to 2004-05 (amount in Rs.)

Item	2002-03	2003-04	2004-05
NON-LABOUR COSTS			
Land rent*	7539.68	8027.00	8975.62
Land preparation	1606.74	1613.42	1648.15
Fertilizers	4417.23	4602.56	4900.10
Pesticides	6835.57	7415.69	7908.94
Plastic covers	584.54	571.66	567.42
Foundation seed	906.06	912.14	900.20
Seed processing	3074.04	2992.92	2248.31
Transport	549.00	505.92	520.31
Interest on working capital	5950.00	6200.00	6390.00
Others	471.27	462.62	414.02
Total Non-Labour	31934.12	33303.92	34473.07
LABOUR COSTS			
Sowing	86.10	85.40	84.33
Weeding	676.16	674.57	738.34
Fertilizer and pesticide application	1189.37	1227.03	1300.48
Cross-pollination	23305.90	26637.25	29239.24
Harvesting	622.05	635.58	482.28
Seed processing (grading)	210.50	220.96	204.52
Total Labour	26090.08	29480.79	32049.20
TOTAL Expenditure (Non-labour+ labour)	58024.20	62784.71	66522.28

* Land rent includes irrigation expenses

**Table 3: Farm Size Wise Per Acre Average Cost of Cultivation 2002-03 to 2004-05
(amount in Rs.)**

Item	2002-03		2003-04		2004-05	
	Small	Big	Small	Big	Small	Big
NON-LABOUR COSTS						
Land rent	7962.10	7198.92	8425.93	7724.44	9419.19	8784.00
Land preparation	1853.40	1435.68	1767.41	1496.63	1964.98	1511.27
Fertilizers	4473.20	4350.27	4728.89	4506.74	5293.43	4730.18
Pesticides	6995.24	6704.86	7302.96	7502.25	8196.97	7654.91
Plastic covers	666.22	526.74	670.74	496.52	633.08	539.05
Foundation seed	945.07	878.38	939.26	891.57	952.02	877.82
Seed processing	3400.00	3061.55	2943.02	3030.76	2393.05	2185.79
Transport	561.31	433.84	580.70	419.55	566.33	404.73
Interest on working capital	6800.00	5200.00	7300.00	5700.00	7600.00	6000.00
Others	450.08	486.49	448.89	473.03	458.08	538.18
Total Non-Labour	34106.62	30276.71	35107.79	32241.49	37477.14	33225.93
LABOUR COSTS						
Sowing	90.25	82.86	91.33	80.90	92.34	80.87
Weeding	757.47	621.62	764.15	606.63	914.31	662.33
Fertilizer and pesticide application	1488.40	995.03	1509.78	1012.58	1653.28	1004.87
Cross-pollination	22318.08	24184.27	25103.56	27345.38	27783.67	29863.25
Harvesting	618.62	616.65	654.86	620.97	513.06	468.98
Seed processing (grading)	277.84	165.41	301.48	159.89	315.15	156.73
Total Labour	25550.66	26665.84	28425.16	29826.35	31271.82	32237.03
TOTAL (Non-labour+ labour)	59657.28	56942.55	63532.95	62067.84	68748.96	65462.97

Table 4: Area Wise per Acre Average Cost of Cultivation 2002-03 to 2004-05 (amount in Rs.)

Item	2002-03		2003-04		2004-05	
	Kurnool	MB Nagar	Kurnool	MB Nagar	Kurnool	MB Nagar
NON-LABOUR COSTS						
Land rent	7231.91	8182.00	7634.76	8913.24	8623.35	9932.08
Land preparation	1451.37	1931.00	1419.05	1988.41	1442.32	2206.98
Fertilizers	4323.91	4612.00	4409.52	5030.10	4664.56	5529.62
Pesticides	6497.04	7540.00	7088.90	8009.80	7488.70	9037.74
Plastic covers	521.83	715.40	496.71	731.57	513.00	715.19
Foundation seed	837.09	1050.00	884.76	969.22	878.16	961.51
Seed processing	2959.63	3312.82	2873.97	3267.16	2116.67	2605.74
Transport	547.79	551.00	474.50	561.57	535.43	484.72
Interest on working capital	5866.30	6120.98	6116.05	6312.94	6348.63	6493.96
Others	467.37	479.00	454.76	479.41	410.91	433.58
Total Non-Labour	30704.22	34494.20	31852.99	36263.41	33021.71	38401.11
LABOUR COSTS						
Sowing	79.54	99.80	78.43	100.59	77.87	101.89
weeding	561.09	916.30	545.14	947.65	572.13	1189.62
Fertilizer and pesticide application	907.71	1777.20	925.43	1860.00	1112.68	1846.60
Cross-pollination	23751.94	22342.80	26768.70	26105.02	29427.92	28684.53
Harvesting	661.83	539.04	676.49	557.61	490.41	460.21
Seed processing (grading)	190.61	252.00	190.95	284.90	171.51	294.15
Total Labour	26152.72	25927.14	29185.14	29855.76	31852.51	32577.00
TOTAL (Non-labour+ labour)	56856.94	60421.34	61038.13	66119.18	64874.22	70978.11

Table 5 : Daily Rates of Minimum Wages for Agricultural Workers Fixed by Different States/Union Territories (UTs) under the Minimum Wages Act, 1948.

As on 1.10.2002	
State/UTs	Minimum wages for unskilled agricultural workers (Rs. per day)
1	2
National Floor Level Minimum Wages (Figures in brackets indicate the date from which applicable)	35.00 (01.06.1996) 40.00 (01.06.1998) 45.00 (01.12.1999) 50.00 (01.09.2002)
Andhra Pradesh	Rs. 52.00 to Rs. 55.50 p.d. (According to Zones)
Arunachal Pradesh	Rs. 39.87 to 42.11 p.d. (According to Areas)
Assam	60.00 * (without food, shelter and clothing) 50.00 (plus food, shelter and clothing)
Bihar	45.18
Goa	58.00
Gujarat	50.00
Haryana	74.61
Himachal Pradesh	51.00
Jammu & Kashmir	45.00
Karnataka	51.63
Kerala	Rs. 30.00 (for Light Work) Rs. 40.20 (for Hard Work)
Madhya Pradesh	51.80
Maharashtra	45.00
Manipur	Rs. 62.15 * (for Valley areas) Rs. 65.15 (for Hill Areas)
Meghalaya	Rs. 50.00 *
Mizoram	84.00

(Continued)

1	2
Nagaland	Rs. 45.00
Orissa	Rs. 52.50 *
Punjab	Rs. 72.38 * (with meal) Rs. 82.08 (without meal)
Rajasthan	Rs. 60.00
Sikkim	The Minimum Wages Act, 1948 yet to be extended.
Tamil Nadu	Rs.54.00
Tripura	Rs.45.00
Uttar Pradesh	Rs.58.00 *
West Bengal	Rs.58.90 * (with meals) Rs.62.10 (without meals)
Andaman & Nicobar Islands	Rs. 70.00 (Andaman) Rs. 75.00 (Nicobar)
Chandigarh	Rs. 81.65 *
Dadra & Nagar Haveli	Rs. 60.00 *
Delhi	Rs. 102.60 *
Lakshadweep	Rs. 46.80 *
<u>Pondicherry</u>	
(i) Pondicherry Region	Rs. 45.00 to Rs. 100.00
(ii) Mahe Region	Rs. 30.00 (for light work) Rs. 40.20 (for hard work)
(iii) Yanam Region	Rs. 19.25 to Rs. 26.25
(iv) Karaikal Region	Rs. 45.00 to Rs. 100.00
Central Sphere	Rs. 87.01 to Rs. 97.12 *

* - Indicate the provision of variable dearness allowance with the minimum rate of wage.

Source: Ministry of Labour, New Delhi.