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Front line demonstration for cotton pickers with cotton harvesting bag to estimation seed cotton picking quantity, economics and its impact on drudgery

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Abstract

The study was undertaken to demonstrate on the usage in cotton harvesting bag to reduced drudgery of cotton pickers, from the first hand information, by conducting surveys, primary were collected from the selected villages of Bhadradi kothagudem district of Telangana during kharif 2018 and 2019. Cotton harvesting bag was most acceptable for ease in tying, picking, emptying, load carrying and ergonomically efficient compared to traditional practice use of gunny bag or cloth tied to the body. Cotton harvesting bag was increased work efficiency (10.2%), save the time of seed cotton picking and labour, and effectively reduced drudgery of the cotton pickers.

Keywords: Cotton harvesting bag, drudgery and economics.

Introduction

Wide spread adoption of Bt hybrid cotton with its synchronised boll bursting during 2005-2007 brought lot of changes in manual cotton harvesting in rural India due to limited availability of harvesting time and women harvesters resulted rise in the cost of seed cotton harvesting chages US \$ 0.03-0.13/ kilogram-1 (Anonymous, 2009) [2]. Cotton harvesting manually involves moderate drudgery due to posture, load of picked cotton and abrasion of fingers (Bal and Sharma, 2012; Chauhan, *et al.*, 2012 and Narenderjit, 2006) [3, 5, 8]. Hand harvesting operation requires 450-500 women-hr ha-1 which costs US\$ 79-248 ha1 (Chaudhary, 2011 and Chauhan *et al.*, 2012) [4, 5]. Big boll size, long to extra long cotton fibres with *G. barbadense* cotton whose dehisced boll beaks were sharp, cannot open more than 180° angle therefore, abrasive to the fingers and forearms of cotton harvestors. Labour shortages for harvesting had been experienced in intensively cultivated states due to synchronization and early maturity by a month which narrowed the harvesting window besides increased the load on limited available rural women (Hebbar *et al.*, 2007) [7]. Cotton harvesting bag went a sea change in adapting to Indian cotton harvesting (Tatom and Greenville, 1952) [9]. Cotton harvesting bags were designed, tested and popularized to improve cotton harvesting efficiency and reduce trash content (AICRPH, 2004) [1]. Cotton harvesting bag aided to reduce drudgery, efficient collection and field transportation of manual cotton harvesting (Chaudhary, 2011) [4]. There was no increase in harvesting efficiency due to energy variability among harvestors but certainly reduced drudgery as they were ergonomic (Chauhan *et al.*, 2012) [5]. Present onfarm adoptive research was concentrated on designing and evaluation of superior cotton harvesting bags suitable for cotton harvesting season of mild winters to moderate summer in Vidarbha region of Central India in participatory mode by contract manual cotton harvesting women in small farms. A new innovative cotton harvesting bag was designed by Ms. Sunita Chauhan, SMS, Farm Science Centre, Central Institute for Cotton Research, Nagpur. Experiences with front loaded cotton harvesting bags from Home Science Department, Marathwada Agriculture University, (MAU), Parbhani and Chinese battery operated small farm cotton picker, besides back loaded cotton harvesting bag of Family

Materials and Methods

A Study on cotton harvesting bag in cotton picking and their role in combat drudgery and occupational health hazards subjects was carried out on 30 different farmers field villages of Sarvaram, Gollagudem Thanda, Hawalath Thanda, Sarpanch Thanda, Chitti Ramavaram, Narsimhasagar, Pathanjanapuram, and machinapeta in Sujatha Nagar mandal of Bhadradi Kothagudem District in Telangana, India. Subjects were selected and were checked occupational health hazards levels faced by them through a questionnaire called the pre schedule questionnaire. General information like name, age, gender, location, years of work experience was recorded to know the problems, while doing farming activities in cotton fields. Pre schedule questionnaire was developed to know the problems encountered and to check the injuries level faced by cotton pickers. After close vision and understanding of the cotton pickers difficulty while working in the fields through developing pre schedule questionnaire, cotton harvesting bag was designed and compared with the traditional practice subject like the cotton harvesting bag was assessed against cotton pickers traditional practice use of gunny bag or cloth tied to the body.

Results and Discussion

General Information:

The results on the age group of 40percent of sample are 20-30 years age group, 30percent of sample are 31-40 years, 20 percent of sample are 41-50years and 10 percent are in 51-60 years. Gender only females participated. years of work experience 50 percent of sample are 1-5 years, 20 percent of sample are 6-10 years, 10 percent of sample are 11-15 years,

10 percent of sample are 16-20 years and 10 percent of sample are 21 years and above. 50 percent of sample are educated and 50 percent of sample are uneducated in 2018 year and the age group of 30 percent of sample are 20-30 years age group, 40 percent of sample are 31-40 years, 20 percent of sample are 41-50years and 10 percent are in 51-60 years. Gender only females participated. years of work experience 40 percent of sample are 1-5 years, 30 percent of sample are 6-10 years, 10 percent of sample are 11-15 years 10 percent of sample are 16-20 years and 10 percent of sample are 21 years and above. 30 percent of sample are Educated and 70 percent of sample are uneducated in 2019 year.

Farm Womens (cotton picking participateries) Feed Back

Expressed views of cotton picking participate womens on Comparision Cotton harvesting bag with traditional cotton picking practices during 2018 and 2019 result showed (Table.1). Data revealed that 77 percent womens expressed increased work efficiency cotton picking with Cotton harvesting bag in 2018 and 85 percent in 2019 compared with traditional practice was 23 and 15 percent. 70 percent farm womens feel cotton picking comfort with Cotton harvesting bag in both years 2018 and 2019 whereas 30 percent in 2018 and 20 percent in 2019 by traditional cotton picking practices. Cotton harvesting bag stress reducing 60 and 90 percent participatory women opinion in 2018 and 2019, respectively compared with traditional cotton picking practices was 20 percent in 2018 and 10 percent in 2019. 53 percent in 2018 and 80 percent in 2019 women cotton pickers opinion on Cotton harvesting bag was reduced body load.

Table 1: Comparison Between the Traditional Cotton Picking Practices and Cotton Harvesting Bag During 2018 and 2019.

Parameters	2018			2019			Pooled		
	Cotton picking practices								
	Tradi-tional	Cotton harvesting bag	Both	Tradi-tional	Cotton harvesting bag	Both	Tradi-tional	Cotton harvesting bag	Both
Trial time (hr)	1.0	1.0	-	1.0	1.0	-	-	-	-
Work efficiency (percent)	23.0	77.0	-	15.0	85.0	-	19.0	81.0	0.0
Comfort level (percent)	30.0	70.0	0.0	20.0	70.0	10.0	25.0	70.0	5.0
Stress reducing (percent)	20.0	60.0	20.0	10.0	90.0	-	15.0	75.0	10.0
Reducing body load (percent)	20.0	53.0	27.0	20.0	80.0	-	20.0	66.5	13.5

*Note: Cotton picking in traditional method used gunny bag/cloth tied to the body.

Estimation of seed cotton picking quantity (kg per hr per women and kg per day per women) A women Cotton picking with cotton harvesting bag was 5.2 kg per hr, 41.6kg per day in 2018 and 5.6 kg per hr, 44.8kg per day in 2019. respectively, where as comparatively with traditional practice was 4.8kg per hr, 38.4kg per day in 2018 and 5.0 kg per hr, 40.0kg per day in 2019. On pooled mean basis maximum quantity of seed cotton picking with cotton harvesting bag was 5.4kg per hr 43.2kg per day and traditional practice was 4.9kg per hr 39.2kg per day (Table.2). Cotton pickers seed cotton picking with cotton harvesting bag increased quantity 0.4kg per hr per women and 3.2kg per day per women, and 8.4 percent increased work efficiency in 2018 and 0.6kg per hr per women, and 4.8kg per day per women and 10.7 percent increased work efficiency in 2019. On pooled mean basis maximum increased seed cotton quantity picking with cotton harvesting bag was 0.5kg per hr and 4.0 kg per day and 10.2 percent work efficiency.

Economics

Farmer paid an amount of Rs.8.0 per kg picking seed cotton in the experimental area. Cotton pickers useing cotton harvesting bag who are earned an amount of was Rs. 41.6 per hr, and per day Rs.332.8 in 2018 and Rs.44.8 per hr and Rs.358.4 per day in 2019. respectively, in traditional practice was Rs. 38.4 per hr, Rs. 307.2 per day in 2018 and Rs.40.0per hr, Rs.320.0 per day in 2019. On pooled mean basis earned an amount of rupees with cotton harvesting bag was Rs. 43.2 per hr Rs. 345.6 per day and traditional practice was Rs. 39.2 per hr, Rs. 313.6 per day.

Additional earning with cotton harvesting bag was Rs. 25.6 per day, Rs.768 in 30working days in 2018 and Rs.38.4 per day, Rs.1152 in 30 working days in 2019. On pooled mean basis cotton picking with cotton harvesting bag getting additional earning was Rs.32 per day and Rs.960 in 30 working days.

Table 2: Estimation of Seed Cotton Picking Quantity (kg) and Economics.

Parameters	2018		2019		pooled	
	Traditional	Cotton harvesting bag	Traditional	Cotton harvesting bag	Traditional	Cotton harvesting bag
Trial time (hr)	1.0	1.0	1.0	1.0	-	-
Seed Cotton picking quantity (kg)						
a. kg per hr per women	4.8	5.2	5.0	5.6	4.9	5.4
b. kg per day(8hrs) per women	38.4	41.6	40.0	44.8	39.2	43.2
Seed Cotton picking quantity (kg) deviation (+ or -)						
a. kg per hr per women	-	+0.4	-	+0.6	-	+0.5
b. kg per day (8hrs) per women	-	+3.2	-	+4.8	-	+4.0
c. work efficiency in terms of percentage	-	+8.4	-	+10.7	-	+10.2
Amount earning (Rs.) @kg seed cotton picking Rs.8.0						
a. In hour	38.4	41.6	40.0	44.8	39.2	43.2
b. 8hrs per day	307.2	332.8	320	358.4	313.6	345.6
Additional amount earning (Rs.)						
i. Rs. per day)	-	+25.6	-	38.4	-	32.0
ii. 30 working days in a season/year	-	768.0	-	1152.0	-	960.0

*Note: 1. with traditional cotton picking practice per women per day an average 39.2kg seed Cotton picking.

2. With cotton harvesting bag cotton picking practice per women per day an average 43.2kg seed cotton picking.

For Example: 10 women × @ 39.2kg seed cotton per day = 392kg by traditional method of Cotton picking 9 women × @ 43.2kg cotton per day = 388kg by Cotton harvesting on the labour contract basis cotton picking by using cotton harvesting bag save one labour in a day. or one men day without deviation of seed cotton quantity picking compared with traditional cotton picking using gunny bag /cloth tied to the body.

Willingness

Results on the respondents willingness to use the cotton harvesting bags for cotton picking showed (table. 3) that 83 and 80 percent were agreed and 17 and 20 percent were disagreed in 2018 and 2019. Respectively, on pooled mean basis maximum 81.5 percent acceptability of cotton pickers with Cotton harvesting bag based on rating in terms of percent 63.5, was good, 36.5 average and zero poor opinion by cotton pickers with Cotton harvesting bag.

Table 3: Respondents Willingness to Use and Rating Given to the Cotton Harvesting Bag.

Responding on	Percentage 2018	Percentage 2019	Pooled
A. willingness to use			
Yes	83.0	80.0	81.5
No	17.0	20.0	18.5
B. Rating given to cotton harvesting bag			
Good	57.0	70.0	63.5
Average	43.0	30.0	36.5
Poor	0.0	0.0	0.0

Conclusion

As per the results of the study on the cotton harvesting bag had a positive impact in reducing the intensity of the musculoskeletal pains and stress caused in different parts of the body while performing the cotton picking activity. Increased work efficiency of the cotton pickers and earning additional amount per day.

References

1. AICRPH. Annual report of All India Coordinated Research Project on Home Science, 2004.
2. Anonymous. Revolution in Indian cotton. Ed. N. B. Singh, Ag. Comissioner, Directorate of Cotton Development, Mumbai, 2009.
3. Bal S, Sharma S. Ergonomic assessment of cotton harvesting activity with conventional and mechanical methods. APP- 28 16th Punjab Science Congress, Feb 7-9th 2013. Punjab Academy of Sciences, Patiala. Baba Farid University of Health Sciences Faridkot 151203 (Punjab) India, 2012.
4. Chaudhary MR. Harvesting and ginning of *cotton* in the world.

www.icac.org/cotton_info/speeches/Chaudhry/BW97.p df

5. Chauhan S, Ambati RR, Majumdar G, Meshram MK. Drudgery reduction of Farm women with cotton harvesting bags. Indian Journal of Extension Education. 2012; (Special issue)1:118-120.
6. Gandhi S, Yadav N, Dilbagi M. Kapas chugai ka unnat bag", Family Resource and Management Division, Home Science college. Technical Bulletin, CCS, HAU, Hissar, Haryana, 2008.
7. Hebbar KB, Rao MRK, Khadi BM. Synchronized boll development of *Bt* cotton hybrids and their physiological consequences. Current Science. 2007; 93:693-695. www.ias.ac.in/currsci/sep102007/695.
8. Narenderjit. Ergonomic study of cotton harvesting activity performed by rural women of Punjab, 2006. http://www.google.co.in/search?tbo=&tbm=bks&q=inaut hor%22Narinderjit+Kaur%22.
9. Tatom MA, Greenville. Cotton picker's bag. Application December 31, 1948, Serial No. 68,509 4 Claires. (CI. 150--2) Patented June 24, 1952. http://archive. org/ stream/us patent_2601465.