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A Study on Protective Clothing used by the Farm Workers and Development of Protective Clothing for Farm Workers using Post Consumer Waste

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ABSTRACT

The present study was carried out in village Tapa Makrandpur district Pilibhit. Total four crops namely Paddy, Wheat, Sugarcane and Vegetables were selected by the investigator according to season. A preliminary survey was chosen to find out the personal profile of the respondents (15 male and 15 female) selected through purposive sampling technique and existing protective clothing used by the respondents, development of clothing and evaluation of protective clothing using three point rating scale. The result showed that it was found that majority of the males (46.7%) and females (53.3%) were in the age group of 30-40 years. Maximum males (53.3 %) were holding medium land whereas maximum females *i.e.* (46.7%) were having small land. In case of upper garment, cent per cent wore both shirt and kurta during performing the agriculture activities while 73.3 per cent of the male respondents wore T-shirt. In case of female respondents 73.3 per cent wore kameez and blouse (saree) whereas 40 per cent wore kurta during the activities. Most of the respondents were satisfied with the developed clothing.

Keywords: Farm workers, Consumer waste, Protective clothing

INTRODUCTION

India has world's largest number of agricultural workers as 58.4 per cent of population is based on agriculture. Agriculture is one of the three most dangerous sectors in which to work, along with construction and mining (Rani *et al.,* 2014). Agricultural workers are at a high risk for particular cancers, respiratory diseases and injuries. Because of the remote location of much of this work, health services are lacking, often without appropriate safety and health measures, information and training (Nyatuame and Ampiaw, 2013). India is the second largest wheat producer and produces twelve per cent of the world production (Kaur and Bains, 2014). As per National Safety Council, agricultural workers are at increased risk for a variety of illnesses including respiratory disorders, dermatologic conditions, and cancer. This is because of exposure to extreme weather conditions, dust and husk, difficult working postures, lengthy working hours and use of hazardous agricultural tools, machinery and chemicals. Amongst various farm activities wheat and paddy threshing are two major activities which leads to number of health problems (Rani, 2013). Indian farm worker, both men and women are involved in farm activities. Presently the major problems of the workers harvesting of wheat due to the direct exposure to dust that is created in the microclimate during harvesting, which leads to tremendous breathing and lung problems (Kaur and Bains, 2014).

Clothing is supposed to have capability to adjust its inside microclimate, to protect the human body from dangerous environments, and to improve productivity. So, it is important to select proper materials, forms, and wearing methods of work-clothes. Farm-work clothing should protect the human body from environmental conditions such as cold, heat, and humidity as well as

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from working conditions including vinyl greenhouse, crop dusting, and working posture. Farm-work clothing should also enhance the safety, comfort, and efficiency of works. Clothing directly touches human body, between the human body and external environment, helping the human body to adjust or modify its physiological functions according to environment. Clothing also balances the heat exchange between humans and environments. Ultimately, clothing enhances the physiological, and psychological comfort, and broadens the activity area of human (Kim *et al*, 2015).

Keeping the view in mind for the above health related discomfort a study was carried out to mitigate the health problems of farm workers, it was felt necessary to design protective clothing for farm's workers from the post consumer waste so that it can be easily adopted by the farmers during the farm activity.

METHODOLOGY

The present study was carried out in village Tapa makrandpur district Pilibhit. Total four crops namely Paddy, Wheat, Sugarcane and Vegetables were selected by the investigator according to season (Plate 1-4). A preliminary survey was chosen to find out the personal profile of the respondents (15 male and 15 female) selected through purposive sampling technique and existing protective clothing used by the respondents during farming with the help of interview schedule. Post Consumer waste was collected from available resources such as home and tailor shop. Three protective clothing namely gloves, mouth mask, and apron with hood were developed by the investigator from the post consumer waste. After development of the product, The prepared clothing were given to the respondents for one week .The three point rating scale ("Highly satisfied", "Satisfied", and Some-what satisfied") was formulated for taking the preferences of the respondents regarding developed clothing. Satisfaction level of developed clothing was measured with reference to easy to wear, easy to remove, comfortable for breathing and protection from the outer environment.

Plate 1 : Paddy crop

Plate 2 : Wheat crop

Plate 3 : Sugar cane

Plate 4 : Vegetables

RESULTS AND DISCUSSION

Personal profile of the respondents:

Table 1 indicated that majority of the males (46.7%) and females (53.3%) were in the age group of 30-40 years whereas 33.3 per cent of the males and 26.7 per cent of the females were in the age group of 40-50 years. 13.3 per cent of the males belonged to the age group of 20-30 years and 6.7 per cent of females belonged to the age group of 20-30 and 50-60 years as well.

In the case of educational qualification Table 1 showed that majority of the males (33.3%) had intermediate education followed by 20 per cent of the males were high-school and graduate. Only 6.7 per cent

Table 1 : Distribution of the respondents according to personal traits

	Male (n=15)	Female (n=15)
	Frequency (%)	Frequency (%)
Age		
20-30	2(13.3)	1(6.7)
30-40	7(46.7)	8(53.3)
40-50	5(33.3)	4(26.7)
50-60	2(13.3)	1(6.7)
Qualification		
Illiteracy	2(13.3)	3(20)
Primary	1(6.7)	6(40)
High school	3 (20)	4(26.7)
Intermediate	5(33.3)	2(13.3)
Graduation	3(20)	0(0)
Post graduation	1(6.7)	0(0)
Land holding		
Marginal	1 (6.7)	2 (13.3)
Small	5 (33.3)	7 (46.7)
Medium	8 (53.3)	5 (33.3)
Large	1 (6.7)	1 (6.7)

male were post graduate. Majority (40%) of the females were having primary level education whereas 13.3 per cent of the females were intermediate.

Table 1 pointed that maximum males (53.3 %) were having medium land whereas females *i.e.* 46.7 per cent were having small land. Only 6.7 per cent males and females were having large land.

Existing clothing used by the respondents (Plate 2):

Table 2 indicated that in case of upper garment, cent per cent of the males wore both shirt and kurta during performing the agricultural activities while 73.3 per cent of the males wore T-shirt. In case of females, 73.3 per cent wore kameez and blouse (saree) whereas 40 per cent wore kurta during the activities. In case of lower garment, hundred per cent of the males wore pyajama whereas pant, shorts and dhoti were wore by the 73.3%, 60% and 53.3% of the males respondent, respectively (Table 2).

For covering hand, 40 per cent males covered their hand through gloves during the activities. For covering head, most of the males (60%) wore cap and saffa (66.7%) whereas 26.7 per cent females wore cap and duppata (73.3%) for covering their head during performing the activities.

Table 2 : Existing protective clothing used by the respondents

Upper Garment (Male) N=15	F (%)	Upper Garment (Female) N=15	F (%)
Shirt	15(100)	kameez	11(73.3)
Kurta	15(100)	Kurta	6(40)
T-shrit	11(73.3)	Blouse (saree)	11(73.3)
Lower Garment (Male)		Lower Garment (Female)	
Pant	11(73.3)	Salwar	11(73.3)
Pyjama	15(100)	Pyjami	2(13.3)
Shorts	9(60)	Ghagra	11(73.3)
Dhoti	8(53.3)	Any other	0
Hands			
Gloves	6(40)	Gloves	0
Head			
Cap	9(60)	Cap	4(26.7)
Duppatta	0	Duppatta	11(73.3)
Saffa	10(66.7)	Any other	0

F=frequency, %= percentage

Plate 2 : Existing clothing used by the respondents

Evaluation of developed products (Plate 3)

Mouth mask :

Satisfaction level of the developed clothing was assessed using three point rating scale (Plate 3). The data given in Table 3 indicated that 66.6 per cent of the male respondents were highly satisfied with the use of mouth mask and reported that while wearing mask it protect from husk and dust.

Plate 3 : Trials of the developed protective clothing

In case of females, most of females were highly satisfied with the mask in terms of protection (46.7%), easy to wear (40%), remove (53.3%) and comfortable for breathing (46.7%) whereas 33.3 per cent of the female respondents were satisfied with the mouth mask (Table 3).

Apron with hood:

The data given in Table 3 showed that 80 per cent of male respondents reported that they are highly satisfied with the use of apron with hood and said that hood protect the neck and head from the outer environment. Majority of the respondents (60%) were satisfied with the use of apron with hood and they said that it can be easily wear

Table 3: Distribution of the respondents according to their satisfaction level for the features of developed clothing

Parameters	Male (N=15)			Female (N=15)		
Mask	Highly Satisfied F (%)	Satisfied F (%)	Somewhat Satisfied F (%)	Highly Satisfied F (%)	Satisfied F (%)	Somewhat Satisfied F (%)
Protect from wheat husk penetration	10(66.6)	4(26.7)	1(6.7)	7(46.7)	5(33.3)	3(20)
Easy to wear	7(46.7)	8(53.3)	0	6(40)	5(33.3)	4(26.7)
Easy to remove	4(26.7)	6(40)	5(33.3)	8(53.3)	4(26.7)	3(20)
Comfortable for breathing	5(33.3)	6(40)	4(26.7)	7(46.7)	5(33.3)	3(20)
Apron with hood (all crops)						
Easy to wear	2(13.3)	9(60)	4(26.7)	3(20)	7(46)	5(33.3)
Easy to remove	3(20)	9(60)	3(20)	4(26.7)	7(46.7)	4(26.7)
Protect from outer environment	12(80)	3(20)	0	11(73.3)	3(20)	1(6.7)
Gloves						
Easy to wear	2(13.3)	11(73.3)	2(13.3)	3(20)	12(80)	0
Easy to remove	5(33.3)	6(40)	4(26.7)	8(53.3)	6(40)	1(6.7)
Protect from cutting of crop	5(33.3)	10(66.7)	0	4(26.7)	11(73.3)	0

and remove. In case of females, majority of the females (73.3%) were highly satisfied with the use of apron with hood and they reported that the apron with hood provide protection from the outer environment whereas 46.6 per cent of the female respondents said that they were satisfied with the use of apron with hood and it can be easy to wear and remove (Table 3).

Gloves:

The data given in Table 3 revealed that majority of the male respondents (66.7%) were satisfied with the use of gloves and reported that while wearing the gloves it protect hands from the cutting of the edges of the sugarcane leaves while 73.3 and 40 per cent of the respondents said that it can easy to wear and remove, respectively.

Conclusion:

It can be concluded that the developed protected clothing using post consumer waste were found to be highly acceptable by the respondents. The developed clothing provide protection as well as comfort during farming activities and it can be washed and maintained easily at their home. It can say that the clothing prepared by the post consumer waste will be economically viable and has potential use for farmers.

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