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Design and development of protective gear for Chilli destalkers

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Abstract

Destalking of dry chillies is a process followed at the trader's level to improve the colour and quality of chilli powder. Women are engaged in this manual activity who not only face health issues but encounter injuries to hands and fingers due to the dry prickly stalks of chillies. Information on the period of work, output and health issues were elicited with the help of specially designed questionnaire developed for the purpose. 50 women were involved in the study. The survey results revealed that the destalking operation is done from four to six months in year spending 5-10 hours per day by 44% of them, with an output of more than 6 kg per day by 64%. 82 per cent indicated that they feel burning sensation in hands and fingers which they overcome using fine jute thread to wrap fingers. Sixty per cent had irritation in nostrils due to pungency, pain on fingers (48%), and eye irritation (46%) respectively. Based on these survey results hand gloves were designed different length, using cotton fabric and knitted fabric and in style with quirks and without quirks. Design features were evaluated by the experts for their suitability and glove without quirks received higher response.

Keywords: Chilli destalkers, irritation in nostrils due to pungency, pain on fingers

Introduction

Chilli is one of the prime commercial crops of India. In Andhra Pradesh this crop is being cultivated on commercial basis larger areas with higher yields and revenue. In terms of exports, it stands first among other states. Among thirteen districts of Andhra Pradesh, Guntur is prominent in growing chilli in an area of 66,896 hectares with production of 1.2 lakh tones (Velayutham and Damodaran, 2015) ^[4]. Farm men and women are involved right from sowing to harvest and storage of the crop. Among all postproduction operations, destalking is one of the important operations that is done for maintenance of quality and colour of chilli powder. It is this quality that customers see before paying. Apart from this, it also forms a main operation for export of dried chill pods in precising the space during transport.

In this context, chilli processing units play a prime role at the trader's end. One can see a greater number of units working in Guntur's Chilli Market Yard which is Asia's biggest market yard. Destalking is exclusively done by women in the units manually, with bare hands. A preliminary survey of units gave an insight into their health problems and physical injury due to this repetitive movement without any protection.

According to Dwivedi and Kiran (2013) ^[1] major problems faced by the workers during threshing are largely related to skin like itching, dry skin, cracks, pimples, and acne. Other physical health problems are pain in shoulder & elbow, stiffness, and tremors in hands. These women opined that if their hands can be protected, it not only helps to prevent injuries by also helps to increase their efficiency of destalking. Padma and Shaik (2017) ^[3], developed indigenous gadgets to combat health hazards of agricultural workers while harvesting of okra fresh pods, cotton picking, chilli picking, etc. Gandhi *et al*, (2014) ^[2] stated that appropriate protective gadgets not only reduce the health hazards, but also increases the output thereby increasing the efficiency of the worker. Hence, protective gloves were developed to overcome physical health problems faced by the women labour while destalking of dried chilli pods in the processing units.

Material and Methods

Physical survey was conducted through personnel interview using a specially designed interview schedules to illicit various problems associated with destalking.

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Fifty women who are actively involved in destalking of dried chilli pods were selected for the study. The requirement of women for protection and comfort was also identified with the questionnaire. Based on the filed survey a suitable protective gloves for both hands were developed in ¾th length using thick plain weave cotton fabric (100 GSM) and cotton knitted (150 GSM) fabric.

Results and Discussion

Field survey

Personally visited the chilli processing units located in and around the Guntur. Information pertaining to time and period of their work, precautionary measures if any followed by them during destalking chilli pods in processing units were tabulated (Table1 & 2). Survey indicated that 44 % spend 5-10 hours per day and the turn overcapacity was 5-6 kg/day of dried chilli (64%). Eighty two percent of destalkers expressed that feeling of burning/hot sensation on hands, fingers followed by irritation in nostrils due to pungency by 62%, Pain

of fingers and hands by 48%, and eye irritation by 46% of them (Table 3).

Table 1: Hours of exposure

Daily exposure duration	N = 50	
	No. of persons involved	
Less than 1 hour	4 (8)	
1-5 hours	6 (12)	
5-10 hours	22 (44)	
More than 10 hours	8 (16)	

Table 2: Turnover of destalking per day

S. No.	Turnover per day	N = 50	
		No. of persons involved	
1.	Less than 2 kgs	-	
2.	2-4 kgs	4 (8)	
3.	5-6 kgs	14 (28)	
4.	More than 6 kgs	32 (64)	

Table 3: Type of problems encountered while destalking

S. No.	Problems encountered	N = 50	
		No. of persons involved	
1	Cuts and scars on fingers	12 (24)	
2	Pain of fingers and hands	24 (48)	
3	Deformation on nails	4 (8)	
4	Minor cracks on the fingers /nails	10 (20)	
5	Cough due to continuous expose to dry chilli pods	12 (24)	
6	Irritation in nostrils due to pungency	30 (60)	
7	Feeling of burning/hot sensation on hands, fingers	41 (82)	
8	Burning sensation in eyes and mouth	12 (24)	
9	Eye irritation	23(46)	
10	Running nose	17(34)	

Table 4: Type of local measures followed

S. No.	Protection measures	N = 50	
		No. of persons involved	
1	Covering mouth with cloth/towels	9 (18)	
2	Wrapping fingers with old waste clothing	7 (14)	
3	Wrapping fingers with ‘Band-Aid’	9 (18)	
4	Wrapping fingers with cellophane tape	5 (10)	
5	Wrapping fingers with fine jute thread (purikosa).	20 (40)	

The local measures they were adopted to overcome these problems were wrapping their fingers with fine jute thread (purikosa) 40%, covering mouth with cloth/towels (18%) and wrapping of fingers with Band-Aid (18%) respectively (Table 4).

Design, Construction and Evaluation of glove

Based data analysis, four glove designs, two with quirks and two without quirks were developed using two different fabrics. The features of the gloves were evaluated by subject matter experts.

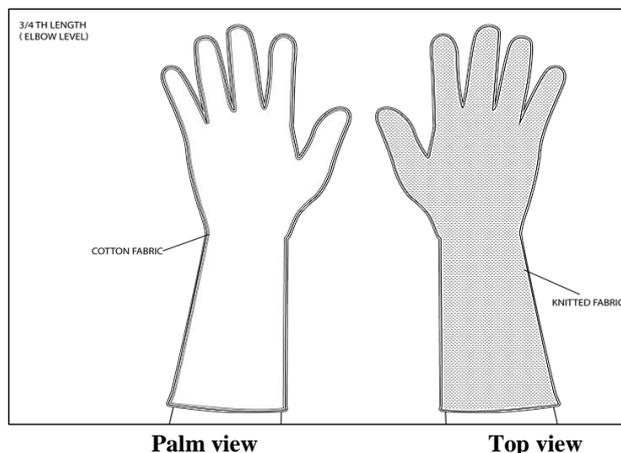


Fig 1: Constructed design I

By the destalkers without hindering the work efficiency of destalking operation. Further, the developed gloves were evaluated for their performance based on different features of the glove.

Among two different lengths designed, 3/4th length received highest response score by experts. Ninety five per cent and above voted for glove without quirks, and an average of 90% of them have chosen the style of glove with woven fabric on

the palm side and knitted cotton fabric on the back of palm side in the glove.

In case of gloves with quirks, woven cotton was used in glove while the quirks were added with knitted cotton material. The response scores for this type of glove was below 80% indicating that gloves design without quirks and 3/4th length of glove were greatly preferred (Table 5 and Fig.1).

Table 5: Character evaluation of gadget for destalkers

S. No.	Character	Response	Number of persons	Score awarded	Character score %
1.	Glove length				
	Short	Extremely suitable	25	100	75.5
		Very suitable	12	36	
		Moderately suitable	5	10	
		Slightly suitable	5	5	
		Not at all suitable	3	0	
		Total	50	151	
	3/4 th length	Extremely suitable	30	120	88.5
		Very suitable	19	57	
		Moderately suitable	0	0	
		Slightly suitable	0	0	
		Not at all suitable	1	0	
		Total	50	177	
2.	Glove style				
	Without quirks	Extremely suitable	44	176	95.5
		Very suitable	4	12	
		Moderately suitable	1	2	
		Slightly suitable	1	1	
		Not at all suitable	0	0	
		Total	50	191	
	With quirks	Extremely suitable	23	92	77
		Very suitable	20	60	
		Moderately suitable	1	2	
		Slightly suitable	0	0	
		Not at all suitable	6	0	
		Total	50	154	
3.	Glove without quirks				
	Cotton fabric on the palm side	Extremely suitable	40	160	93
		Very suitable	7	21	
		Moderately suitable	2	4	
		Slightly suitable	1	1	
		Not at all suitable	0	0	
		Total	50	186	
	Knitted fabric on the back of palm	Extremely suitable	36	144	88
		Very suitable	8	24	
		Moderately suitable	4	8	
		Slightly suitable	1	1	
		Not a all suitable	1	0	
		Total	50	177	
4.	Glove with quirks				
	Woven cotton for glove	Extremely suitable	23	92	77
		Very suitable	20	60	
		Moderately suitable	1	2	
		Slightly suitable	0	0	
		Not at all suitable	6	0	
		Total	50	154	
	Knitted fabric for quirks	Extremely suitable	33	132	79%
		Very suitable	6	18	
		Moderately suitable	1	2	
		Slightly suitable	6	6	
		Not at all suitable	4	0	
		Total	50	158	

Conclusion

From the above study it can be suggested that glove with thick cotton fabric and knitted material in 3/4th length was

most sought after as the knitted fabric is flexible and helps to move the fingers easily and the cotton fabric can give good grip when holding the pods to destalk.

References

1. Dwivedi P, Kiran V. Occupational health hazards among farm women. *International Journal of Humanities and Social Science Invention* 2013;2(7):08-10.
2. Gandhi S, Mehta M, Dahiya R. Occupational Health Hazard in *Abelmoschus esculentus* (Bhindi) Picking and Mitigating Measures. *Advances in Crop Science and Technology* 2014;2(4):1-4.
3. Padma A, Khateeja SK. Indigenous Method to Combat Environmental Health Hazards of Agricultural Workers While Harvesting. *International Journal of Educational Science and Research (IJESR)* 2017;7(5):91-100.
4. Velayutham LK, Damodaran K. Growth Rate of Chilli Production in Guntur District of Andhra Pradesh. *International Journal of Research in Humanities and Social Studies* 2015;2(11):1-5.