

Doi: [HTTPS://DOI.ORG/10.23910/2/2023.0506b](https://doi.org/10.23910/2/2023.0506b)

## Assessing Drudgery Perceived by Agricultural Labourers in Chikkaballapur District of Karnataka

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### Article History

Article ID: IJEP0506b

Received on 23<sup>rd</sup> November, 2022Received in revised form on 24<sup>th</sup> April, 2023Accepted in final form on 22<sup>nd</sup> May, 2023

### Abstract

The present study was conducted in Chikkaballapur district of Karnataka, India during 2019 to investigate amount of drudgery faced by agricultural labourers. Primary data collected for 13 selected farm operations from randomly selected 200 (144 men and 56 women) agricultural laborers using structured interview schedule for assessing drudgery perceived by them in performing these 13 operations. The results revealed that women labourers were perceived more drudgery in farm operations as compared men labourers. Women labourers perceived weeding, stubble collection and pesticide application were highest drudgery prone activities whereas men labourers perceived weeding, stubble collection and harvesting were highest drudgery prone activities. Out of thirteen selected farm activities, seed treatment was significantly lowest drudgery prone and weeding was the highest drudgery prone activity for both men and women labourers in the study area. Experience, family size and duration of employment were found to have significant and negative relationship with average drudgery and age & income were positively related with average drudgery. The drudgery among both men and women labourers can be reduced by gaining work experience, using ergonomically refined tools and proper management of employment pattern, duration and income.

**Keywords:** Drudgery, gender, agricultural labourers, assessment

### 1. Introduction

Drudgery is conceived being experienced as physical and mental strain, fatigue, monotony and hardships while doing job (Borah et al., 1998; Dudhal, 2017). Farmers are still using traditional methods of cultivating in hills of Himachal Pradesh. Lack of mechanization in area append extra burden on women, increasing the drudgery level that in turn affects their nutritional status and health (Gupta et al., 2020). It is certain that if adequate farm equipment is put at the disposal of farm workers this would help to reduce drudgery, increase the productivity and thus decrease the workload and improve efficiency (Kishtwaria and Ranab, 2012; Mehta et al., 2018). The innovation and making the technology reach labourers across the country will help to reduced drudgery of labour and improved efficiency (Maske et al., 2020). There is a specific need of women friendly tools in the study which should not be heavy, distort the correct postures and reduce the work force (Tripathi et al., 2018). Some of the farm activities are strenuous that leads to both physical and psychological stress to farmers (Pratibha et al., 2018). The Periodic Labour Force Survey 2017-18 shows sharp decline in worker to population ratio for rural women. It has dropped from 24.80% in 2011-12

to 17.50% in 2017-18 (*all age's data*). Though it has slightly increased in 2018-19 to 19%. This decline was observed more in group of lower income and lower literacy. Landless women and men perform more work in crop cultivation than land owners (Anshu and Varma, 2017). The drudgery perception about agricultural operations helps to deal with ergonomical issues in development of tools and implements in hilly areas, it saves time and helps to reduce drudgery and improve the health of tribal people (Singh et al., 2001).

About 43% of India's population is dependent on agriculture as their primary source of their livelihood. Agriculture is the highest employer of women's labour to the extent of 76% in India. The gain in knowledge and skill about drudgery reduction tools increase work efficiency and save their time (Thakar et al., 2021). Using traditional tools for long hours with inappropriate working posture in field leads to drudgery (Varma et al., 2020; Akki et al., 2021). The farm workers frequently get involved in manual handling tasks, leads to face more drudgery because of manual methods of farm activities (Nag et al., 2004). Farm men and women are doing farm operations along with household chores, using traditional hand tools which are the source of drudgery and causes low



efficiency of farm men and women (Tiwari et al., 2015; Singh et al., 2019). During the farm activities the farm workers face pain in different body parts with maximum pain given to lower back while performing almost all activities in crop production system (Renuka et al., 2016). Especially, women spend more hours in productive works as compared to men, leading to more tiredness and drudgery in their operations (Chauhan et al., 2012; Wankhade et al., 2015). Agricultural farm workers suffer from respiratory diseases, skin disorders, certain cancers, chemical toxicity, and heat-related illnesses (Suman et al., 2008). Women are actively engaged in all farm activities and it leads to suffered from health problems, management problems, social and financial problems (Hemla et al., 2013). The amount of energy spent by farm women while performing farm activities with improved technologies was low compared to traditional methods (Rondla et al., 2019). The role of women in crop production is dominant by their total share in activities (Mrunalini and Snehalatha, 2010). Low wages, drudgery prone labour, dual burden of work and family are the major problems faced by women labourers (Parmindar et al., 2015). The labour scarcity is more severe in rural areas due to less preference of labourers to farm operations as farm operations are more drudgery prone. In long term, this leads to less labour participation in the primary sector which can cause reduction in agricultural production. Women friendly farm tools and equipments are needed for reducing their drudgery in different farm operations (Mehta et al., 2018). Keeping this in view, the present study was planned to assess drudgery perceived by agricultural labourers in different farm operations in Chikkaballapur district of Karnataka.

## 2. Materials and Methods

The present study was conducted in Chikkaballapur district of Karnataka with sample of randomly selected 200 farm labourers from randomly selected 20 villages of Chintamani and Bagepalli blocks. The Chikkaballapur district is situated between 77°40'-77°45' Eastern longitude and 13°20'-13°30' Northern latitude with a Mean Sea Level 4813 and 3050 feet respectively in south to western portion. The primary data were collected on profile parameters, the amount of time spent by the respondent in a particular farm activity, the frequency with which the operation was repeated during the complete production cycle and the perceived difficulty of the operation using a structured interview schedule. The frequency of doing work (seasonally, fortnightly, weekly, alternate day & daily with score of 1, 2, 3, 4 & 5, respectively) and the degree of difficulty (very easy, easy, somewhat difficult, difficult & very difficult with score of 1, 2, 3, 4 & 5, respectively) were scored on a 5 point continuums. The drudgery for each activity has been estimated based on weighted average of average time spent in minutes, frequency of performance of farm activity, degree of difficulty perceived by the respondent while doing the farm activity and using the drudgery index followed by Dudhal (2017), Borah (1998). Drudgery index for an activity

has been simplified for each individual. Overall or average drudgery of a person was computed by taking the average of all drudgery indices related to different activities.

Drudgery index of  $j^{\text{th}}$  respondent in  $i^{\text{th}}$  activity =  $DI_{ij} = \{(X_{ij} + Y_{ij} + Z_{ij})/3\} \times 100$

Overall drudgery index of  $j^{\text{th}}$  respondent =  $DI_j = \frac{1}{m_j} \sum_{i=1}^{m_j} DI_{ij}$

Where,

$$X_{ij} = \frac{x_{ij} t_{ij}}{\sum_{i=1}^{13} x_{ij} t_{ij}}; Y_{ij} = \frac{y_{ij}}{5}; Z_{ij} = \frac{z_{ij}}{5}$$

$i = 1(1)13; j = 1(1)n; n = \text{Number of respondent};$

$m_j = \text{Number of activities performed by } j^{\text{th}} \text{ respondent}$

$x_{ij} = \text{Average time spent in minutes in a day by } j^{\text{th}} \text{ respondent in } i^{\text{th}} \text{ activity}$

$t_{ij} = \text{Number of days } j^{\text{th}} \text{ respondent performed } i^{\text{th}} \text{ activity}$

$y_{ij} = \text{Relative score related to frequency of work for } j^{\text{th}} \text{ respondent in } i^{\text{th}} \text{ activity, takes value 1:}$

Seasonally, 2: Fortnightly, 3: Weekly, 4: Alternate day, 5: Daily

$z_{ij} = \text{Relative score related to degree of difficulty for } j^{\text{th}} \text{ respondent in } i^{\text{th}} \text{ activity, takes value}$

1: Easy, 2: Veryeasy, 3: Somewhat difficult, 4: Difficult, 5: Most difficult

Folded F values were used to tests the equality of variances between two groups viz. men vs. women labourer. Pooled t-test (for equal variances) and Satterthwaite test (for unequal variances) were used to compare the two group means. Pearson and Spearman correlation coefficients were used to study correlation for quantitative and qualitative variables respectively. Data analysis was performed using SAS 9.3 software (PROC TTEST, PROC CORR, PROC REG, and PROC GLM).

## 3. Results and Discussion

### 3.1. Profile of respondents

The results of profile study demonstrate that majority (72%) of the respondents was men, and only 28% of the respondents were women. The average experience of respondents as an agricultural labourer was 20 years. The average age of the respondents was 43 years. The majority of respondents were illiterate followed by studied upto primary level of education. Majority of the respondents were married and belonged to nuclear family. Majority of the families were headed by men. The average annual income of the respondents was Rs. 40,000/-. Most of the respondent were expressed that their working conditions are good and had satisfactory social participation. Most of the respondents were engaged as seasonal labourer. Majority of the respondents had their workplace nearer, i.e. up to one kilometer to their residence. Majority of men respondents earned average daily wage of Rs.500/- and majority of the women respondents earned average daily wage of Rs.250. The most of respondents were



reported that the daily average working hours are 8 hours.

### 3.2. Drudgery faced by men and women labourer in the farm operation

Table 1 highlighted that the overall drudgery score of women labourers 38.10 whereas men labourers score was 37.20. There was significant difference among men and women in terms of perceived degree of drudgery in different farm operations. Weeding, stubble collection and pesticide application were found highest drudgery prone activities perceived by women labourers whereas Weeding, stubble

collection and harvesting were found highest drudgery prone activities perceived by men labourers. Out of thirteen selected farm activities, seed treatment was significantly lowest drudgery prone and weeding was the highest drudgery prone activity for both men and women labourers in the study area. Pooled t-test and Satterthwaite tests found that out of 13 farm activities, in stubble collection or land preparation, sowing and winnowing women labourers faced significantly more drudgery than men in the study area as in all the three operations women had significantly greater drudgery index values than men labourers.

Table 1: Drudgery perceived by men and women labourer in the different farm operations

Sl. No.	Activity	Drudgery Index								
		Women			Men			P-Value		
		N	Mean	Grouping	N	Mean	Grouping	Folded F	Pooled t	Satterthwaite t
1	Stubble collection/ land preparation	56	43.90	AB	144	41.70	B	0.0122	0.0072	0.0024
2	Seed treatment	53	28.00	F	131	28.20	G	0.9367	0.8462	0.8467
3	Sowing	56	37.30	CDE	143	34.50	EF	0.0006	0.0057	0.0011
4	Weeding	54	47.40	A	110	46.20	A	0.0260	0.1563	0.1203
5	Preparation of FYM	41	34.90	DE	144	36.20	DE	0.9092	0.3296	0.3263
6	Spreading of FYM	47	37.10	CDE	143	37.90	CD	0.8860	0.3469	0.3431
7	Harvesting	54	38.80	CD	138	40.20	BC	0.0857	0.2565	0.2154
8	Pesticide application	37	40.50	BC	140	38.80	BCD	0.0024	0.2588	0.1488
9	Post harvesting	54	37.20	CDE	119	36.30	DE	0.7170	0.4405	0.4479
10	Preparation of bundle	55	36.70	CDE	137	35.90	DE	0.0002	0.4979	0.4141
11	Threshing	52	39.00	CD	84	37.10	CDE	0.0002	0.0933	0.0609
12	Winnowing	52	39.90	BC	84	36.50	DE	0.0007	0.0073	0.0031
13	Filling of seed	55	33.80	E	133	32.40	F	0.0092	0.2253	0.1687
14	Overall	56	38.10		144	37.20		0.0491	0.0595	0.0379

In case of stubble collection or land preparation, both men and women perform the operation seasonally and spend almost equal amount of time in the operation. But, 87.50% of women labourers perceived it most difficult as compared to 56.25% of men perceived it most difficult. This operation used to perform with pickaxe and spade in bending posture by men and women. Furthermore, traditional pickaxe and spade are heavy in weight. Their grip and angle are more suitable to male anthropometry as compared to female anthropometry. As a result, women labourers find it more difficult and drudgery prone activity.

In case of sowing, both genders do it seasonally, but women used to spend a little more time in it than men. Additionally, 87.49% women categorized it as difficult to most difficult farm operation. In comparison 61.80% men found this operation as easy to normal. Only 25% of men labourers stated this operation as difficult.

In case of winnowing, traditionally winnowing was done by holding the produce on an overhead position, then dropping it by shaking hand action against the wind. This separates the grains from lighter debris such as leaves, twigs, dust etc. To perform this action for a prolonged amount of time, the person requires significant upper body strength. Women in general possess lower level of upper body strength as compared to men. Hence, they get tired earlier doing the winnowing operation. In the present study, this operation was done once a season. But, 95.85% women participate in this operation while only 59.02% men do winnowing. This was a predominantly women dominated operation. Women spend significantly more amount of time doing this activity thus, causing muscle fatigue and drudgery. Also 64.28% of women report this operation as most difficult as compared to 26.38% of men. Thus, it can be observed that there was drudgery in most of the agricultural operations and it needs to be addressed by mechanization. But it can also be

concluded that in the operation of stubble collection or land preparation, sowing and winnowing women face significantly more drudgery than men. Hence, these operations need to be addressed through by promoting gender sensitive drudgery reduction interventions. It can be done by introducing the women to women-friendly tools and equipment for stubble collection or land preparation (tractor, power tiller, hand ridgers etc.); sowing (transplanter, seed drills seeders etc.) and winnowing (motor operated winnowers, hand winnowers, threshers, cleaners etc.).

### 3.3. Relationship between the profile of men and women labourers and drudgery involved in different farm operations.

Correlation coefficients were obtained between the average drudgery and different profile variables in the study separately for men and women (Table 2). It was seen that experience had

significant and negative correlation with average drudgery for both men and women labourers. This implies that drudgery reduces with increase in experience for both which was obvious as experience teaches how easily any work can be carried out. In addition to experience, income and education were also found significantly and positively correlated with drudgery of men. This might be because, men with more education expect more income and therefore they perform more difficult works in field which in turn creates more drudgery among men. For women, in addition to experience, distance of work place to residence was found to be negatively and social participation was positively correlated with drudgery. Social participation increases burden for women at household and community level leads to increase in their drudgery.

Table 2: Coefficients of correlation of characteristics of respondents with average drudgery

Sl. No.	Variables	Men		Women	
		R	p-value	R	p-value
1.	Experience	-0.33895	<0.0001	-0.27395	0.0410
2.	Age	-0.13483	0.1071	-0.12710	0.3506
3.	Family size	-0.09296	0.2678	-0.18460	0.1732
4.	Income	0.22947	0.0057	0.22095	0.1017
5.	Duration employment	-0.04745	0.5723	0.10449	0.4435
6.	Wages	-0.02498	0.7663	-0.23275	0.0843
7.	Working hour	-0.04934	0.5570	-0.02369	0.8624
8.	Education*	0.17754	0.0333	0.11533	0.3973
9.	Marital status*	-0.10365	0.2163	-0.07362	0.5897
10.	Family type*	-0.03418	0.6842	-0.18776	0.1658
11.	Head of the family*	-0.10993	0.1896	0.11627	0.3935
12.	Weather condition*	0.00912	0.9136	-0.00596	0.9653
13.	Social participation*	-0.01731	0.8369	0.35943	0.0065
14.	Pattern of employment*	-0.07353	0.3811	-0.15274	0.2611
15.	Distance of work place from residence*	-0.01621	0.8471	-0.28254	0.0349

\* Spearman rank correlation used for qualitative variables

When the distance to work is less, women prefer walking to the field and when the distance to work more they used to opt for easier jobs (less drudgery prone) and prefer shared travelling (pooled travelling through auto or tempo) or public transport as more number of labors are hired at once to ensure timely completion of the operation. While travelling distant places women enjoy the travel and during work the workload was also distributed due to more number of labours, thus, reducing their overall drudgery.

Multiple regression analysis of independent variables with drudgery in different farm activities was carried out (Table 3). The average drudgery was computed and for the same,

regression analysis was performed for a better understanding of the relationship. Five parameters were found to have a significant relationship with average drudgery or overall drudgery. Experience, family size and duration of employment were found to have significant and negative relationship with average drudgery and age & income were positively related with average drudgery. As the experience of the activity increases, the subject tends to commit fewer mistakes. During the course of time the subject also devise easier and more efficient ways to complete the workload, reducing time of operation and drudgery. After middle age, further increase in age leads to decrease in muscle mass and reduction in

Table 3: Coefficients of multiple regression analysis (drudgery faced by men and women laborer = profile variables)

Profile of variables	Intercept	Experience	Age	Family size	Income	Duration of employment
Stubble collection/ land preparation	51.24**	-0.21*	0.14*	-0.04	-0.15*	-0.1**
Seed treatment	26.18*	0.07**	-0.03	-0.14	0.1	0
Sowing	27.41**	0.24**	0.12	0.18	0.1	-0.14**
Weeding	36.14**	-0.21**	0.08	-0.39*	0.01	-0.06**
Preparation of FYM	38.71**	-0.02	-0.02	0.01	0.08	0.07
Spreading of FYM	20.49*	-0.07	0.02	-0.26	-0.05	-0.01
Harvesting	30.7**	0.07	-0.1	-0.29	0.4**	-0.1*
Pesticide application	37.49**	-0.23*	0.01	-0.59	0.03	0
Post harvesting	33.91**	0	0.03	-0.37	0.45**	-0.12**
Preparation of bundle	43.31**	-0.1	0.1	-0.3	0.17*	-0.1*
Threshing	41.56**	-0.13	0.17	-0.26	0.15*	-0.12**
Winnowing	54.7**	-0.46**	0.26**	-0.31	0.23**	-0.12**
Filling of seed	38.96**	-0.4**	0.27*	-0.13	0.25**	-0.1*
Average	36.98**	-0.15**	0.08**	-0.22**	0.14**	-0.07**

\* indicates significant at ( $p=0.05$ ) level ; \*\* indicates significant at ( $p=0.01$ ) level

strength, leading to higher perception of pain by the subject. As the family size increases, the number of family members who can share the workload increases. Thus the drudgery of an individual labor decreases significantly. For gaining higher income, a subject takes on more workload. Hence for higher income, the heavier workload will cause elevated drudgery. When the labour is engaged for a longer duration on the same farm, he or she has an opportunity to pre-plan his or her workload. Thus, distributing the work over a longer duration of time hence, effectively reducing the drudgery. If the same amount of work has to be done in lesser time, the drudgery will increase.

#### 4. Conclusion

Women labourers perceived more drudgery compared men labourers. Seed treatment was found less whereas weeding found high drudgery prone farm activity. Therefore, it is suggested to perform weeding using gender friendly farm tools. Age and income were favorably correlated with average drudgery, but experience, family size, length of employment were adversely correlated. The study reveals that job experience, using ergonomically designed instruments, and properly managing employment pattern, length, and income can lessen the drudgery among labourers, both men and women.

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