

## **Time utilisation pattern of women in agriculture: A study of Odisha**

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### **ABSTRACT**

The study examines the time utilization pattern of women on pre- farm, post-farm, farm and household chore activities in six selected districts region of Odisha. The study is based on simple random sampling technique in interviewing 300 respondents. The collected data were examined using descriptive statistics, paired sample t-test and regression analysis. The analysis of primary data indicates that women are significantly engaged in various agricultural and allied activities in Odisha and their time utilization pattern is more efficient than their male counterparts. The outcome of the paired sample t-test on various activities of men and women portrays that in a household, the male and female members spend their own time in different activities. It is evident that purchase of seeds, fertilizer and pesticides is highly significant. In cleaning the land, the female workers spend most of the time whereas their male counterparts spend less. So far as ploughing and levelling of lands are concerned the study found that mostly the male workers spend time and no or little time is spent by female counterparts. As regards husking, transport of grains to home, milking cattle and caring for children, a significant difference between the male and female workers is revealed. As far as cleaning of utensils is concerned there is not any significant difference between the male and the female workers. This implies that the women workers spend more time than the male workers.

**Key Words :** Time utilisation, Agriculture, Gender issues

### **INTRODUCTION**

Women's contribution to agriculture and allied fields is significant. The level of women's participation in agriculture differs significantly across the regions. But irrespective of these disparities, women are dynamically involved in all kinds of agricultural activities. According to Census 2011, 55 % of the female force was agricultural labourers and 24 % were cultivators. However, it was found that 12.8 % of the operational holdings were possessed by women, which reveal the gender inequality in proprietorship of landholdings in agriculture. Moreover in case of operational holdings there is 25.7 % women concentration in the small and marginal holdings categories. Women in agriculture carry out several labour intensive works such as weeding, grass cutting, hoeing, cleaning of land, storing, washing and many tedious work. They also perform in livestock management and domestic works that involve drudgery and hardship.

**How to cite this Article:** Mohapatra, Dharmabrata and Acharya, Pragyanshree (2018). Time utilisation pattern of women in agriculture: A study of Odisha. *Internat. J. Appl. Soc. Sci.*, 5 (6) : 724-733.

In spite of their hard work in the field and home their role is considerably undermined. Their work is not recognised in the society nor in their houses. They work as subservient to male agricultural workers although their task is equally vital. The present study is an attempt to recognise the role of women in agriculture and their time utilisation pattern in the field certainly enlighten the people about their importance in agriculture and allied activities.

Time-use data are measurable extractions of how people spend their time over a period of time generally over a day and 7 days a week. It explains how different individuals in a population engage themselves with different activities and records the time they devote for each of these activities. Time is precious. Generally in India we find that women in agriculture devote a lot of time in performing household chores and farming activities. Many of them engage themselves in non-farm activities.

Time-use studies try to give a more comprehensive description of time use by male and female workers. Such studies are not usually nationwide explanatory because such data cover small samples, based on different types of activities and use different methods. In spite of these limitations, the evidence from several studies requires time use by agricultural activity advocates exciting figure. The nation-wide representative data points towards that the national average where women's time share in agriculture is 32 per cent of the former. Women play a very significant role in the agricultural labour force and in other agricultural activities. Accordingly their contribution to agricultural output is very significant, however difficult to enumerate with any accurateness (Doss, 2011).

Odisha economy is agro based economy. Major percentage of women labour force work in agriculture. In Odisha 61.8% are total agricultural workers and out of that 57.8 % are women, more than 60 % of the total workforce is indirectly dependent on agriculture. The important feature of these women agricultural labourers is that they are mainly marginal workers. They are under paid due to subsistence burden of living. A number of studies find that inter-state disparities in labor force involvement rates are much higher for rural females compared to urban females.

### **Review of literature:**

There is a wide range of literature related with gender issues in agriculture and allied activities, but at this point we remark only the recent existing works on the issue relating to our objectives under study. We have gone through various literatures review showing the time utilisation pattern and gender participation in agricultural activities. In order to measure the depth of living standards time-use statistics are significant for "developing more realistic and meaningful indicators of welfare and poverty and for providing deeper understanding of the dynamics of poverty and development" (Acharya, 1982).

Srivastava (1985) found from the survey that most of the women regardless of the land status, of their family work 14 to 18 hours of severe physical labour in different activities. It is the inherent drudgery plunge upon the shoulders of women in day to day activities (Borgohain and Akand, 2011). Many evidences from previous research establishes that women play very significant roles in agriculture and related activities including harvesting, livestock production, gardening, post-farming operations and agro-social forestry etc. (Lodha, 2006). It is also found that there is not any activity in agricultural field in which women are not actively involved. (Ferbes and Spasth, 1984; Signal, 1989; Varma, 1992).

Conventionally, women perform all tedious and labour intensive works like seeding, transplanting, hoeing, harvesting, winnowing, and post-farming operations like marketing, arranging and processing etc. All these jobs involve considerable amount of hardship, because it is mostly done manually

(Shilparani, 2007). According to the recent study made by Rais *et al.* (2013) where they have tried to evaluate the economic status of rural women in agriculture and livestock rearing activities in Pakistan. The research has shown that the strong participation of women in the activities like crop production, animal husbandry, poultry, food production and storage, household management and craft making.

Das (2015) studied about the women participation in agriculture in Odisha. She found that rural women in Odisha actively participating in all types of agricultural activities. Even though, women work for long hours and contribute considerably to family income, they are not acknowledged as workers by their family members or by the society. They treat as subservient to the tasks they perform and their occupational choices are limited.

### Time use pattern and women in agriculture:

The involvement of women in agriculture is rising even if technology is advancing. The involvement of farm women in various agricultural activities has been shown in Table 1.

Table 1 : Involvement of women in agriculture	
Agricultural activity	Percentage of involvement
Preparation of land	32 %
Cleaning of seed and planting	80 %
Inter-culturing	86 %
Harvesting, winnowing, withering, washing and storing	84 %

Source: Registrar General of India 2011

We can see from the Table 1, most of the time devoted by farm women in various agricultural activities is very high. In case of inter cultivation activities their involvement is 86 % and for land preparation activities their involvement is only 32 %. Similarly we can verify the time and energy devotion of farm women in a day in the Table 2.

Table 2 : Time involvement of women in various activities	
Activity	Duration
Domestic activities	7.55 hrs.
Agriculture and allied activities	7 hrs.
Sleep	6.5 hrs.
Rest and Recreation	2.15 hrs.
Total	23.2 hrs.

From the above table it is evident that women spend long hours in doing various activities like domestic chores and agricultural activities but still their work is demoralized and their wages are understated.

On the other hand we come across such situations in which mostly women in agriculture are prone to drudgeries while doing various agricultural activities. So to reduce women's drudgery in carrying out household chores, agriculture and related activities and to collect the relevant agronomical data involving farm women, we must find the drudgery prone activities that are prevalent in the field of agriculture.

In the Table 3 it is apparent that major percentage of women are involved in drudgery prone activities in agriculture and their involvement in hours is quite huge which indicates that the women

practise a lot of trouble in doing these activities. In fact, agriculture activities got the highest score among the challenging activities followed by dairy and household chores.

<b>Table 3: Drudgery Prone Activities Performed by Farm Women</b>		
Farm Activities	Percentage of performers	Time spent (Hrs/Year)
Weeding	54	234
Cutting	55	218
Transplanting	57	186
Washing	51	52
Seeding	49	49
Rolling	46	66
Removing shoots	39	72
Picking	33	83
Winnowing	34	40
Collecting and bringing fodder	39	481
Milking	44	335
Cleaning shed	43	137
Collecting dung	39	144
Animal feeding	43	166
Milk processing	45	168

Source: Annual Report, 2000-2001, Department of Agricultural Research and Education, Ministry of Agriculture, Government of India)

## METHODOLOGY

The present study was carried out in six districts of Odisha, located in the eastern zone of India. Six districts namely, Kalahandi, Boudh, Anugul, Nayagarh, Khordah and Bolangir occupy a vital place in the map of Odisha and play a dynamic role in the economy of the state. According to the Odisha Economic survey 2016-17, these selected districts have more female marginal workers that are involved in agriculture. So the female agricultural households selected from these districts can throw some light on the present condition of women in agriculture. Each district consists of several blocks. Kalahandi consists of 13 blocks, Boudh having 3 blocks, Anugul having 23 blocks, Nayagarh having 12 blocks, Khordah having 20 blocks and Bolangir having 12 blocks respectively. Two blocks were consciously selected for the study because they are mostly labour intensive areas. From each selected block two villages were randomly taken for study. Thus, a total of twelve villages were carefully chosen for the study. Then from each village 25 household farmers were selected on the basis of random sampling. Information was gathered from both the head of the family and female agricultural labourers. Thus an aggregate of 12 sample villages and 300 respondents. A structured interview schedule was used to get the necessary information from the respondents. The data were collected by personal interview method with the farmers. Time utilization refers to the amount of time consumed by male and female farmers for undertaking agricultural activities.

Three hundred respondents were interviewed and their views on different decision-making behaviour by the women farmers with respect to farming were analysed with different suitable statistical tools. Present piece of research basically falls in the area of qualitative research, because, here it is attempted to make a qualitative analysis of the problems of women in agriculture.

The present-day study has used both secondary and primary data. Related secondary data are collected from various published sources of Government of India, Government of Odisha and other organizations. The study has used the various census data, data from the directorate of Agriculture, directorate of Economics and Statistics, Government of Odisha. Further, secondary information was obtained from the review of published and unpublished literature. Primary data are collected through a self-administered semi open questionnaire, which was specifically developed for this study. The data are analysed through descriptive statistics like mean, standard deviation, cross tabulation, paired t-test etc. depending on the objective of the study.

## RESULTS AND DISCUSSION

The result of the paired sample t-test on various agricultural and allied activities of male and female are depicted below in which we have divided the activities into three segments namely; Pre-farming, Farming and post-farming activities. Again each activity has been subdivided into own labour and hired labour of the household.

### Pre farming activities:

Table 4 clearly mentions that in a family, male and female person are involved in various agricultural and allied activities. It is apparent that the purchase of seeds, fertilisers and pesticides is highly significant. It therefore describes that all time spent during the activities is done by male workers and minimum time is disbursed by female personnel. In buying fuel it is not significant as both male and female members spend time equally. In cleaning of land we found that female labourers spend much time while their male counterparts devote less time to this task. But so far as ploughing and levelling are concerned we found that mostly male persons spend time with these activities than their female counterparts. In the next activity of sowing seeds in agricultural field, most of the time is devoted by female labourers than male labourers. But in case of watering, usage

Table 4: Paired Sample t-test (Own Labour of the Household)									
Pairs	Activities	Paired Difference			90% confidence interval of the difference		T	Df	Sig. (2-tailed)
		Mean	S.D	Std. Error Mean	Lower	Upper			
Pair 1	Purchasing seeds (own)	1.228	1.789	.145	1.021	1.535	8.237	132	.000
Pair 2	Purchasing fertilisers and pesticides(own)	.728	1.406	.156	.442	.994	4.336	70	.000
Pair 3	Buying fuel (own)	.273	3.887	.457	-.481	1.008	.589	75	.558
Pair 4	Cleaning of Land (own)	-1.029	5.417	.324	-1.571	-.468	-3.051	261	.003
Pair 5	Ploughing(own)	16.261	19.541	1.299	14.099	18.422	12.425	222	.000
Pair 6	Levelling (own)	1.189	3.567	.231	.802	1.597	4.983	220	.000
Pair 7	Sowing(Own)	3.679	26.781	1.796	-6.657	-.720	-2.052	221	.041
Pair 8	Watering and use of fertilisers and pesticides	.695	4.998	.346	.122	1.270	2.002	206	.047
Pair 9	Weeding (own)	-3.816	7.601	.448	-4.554	-3.079	-8.538	288	.000

Source: Compiled and Calculated from Field survey 2016

of fertilisers and pesticides it was found that the male spends more time than the female person. In weeding we found that the female workers spend almost all time in these activities than their male counterparts.

### Farming activities:

In the Table 5 we have stated about the agriculture and allied activities performed by male and female labourers during farming period. In the table with regard to harvesting, threshing, storing the grain, guarding the crop, selling the goods in the market we found there is a significant difference between the male and the female workers describing that male persons spend almost all time in these activities while women labourers spend little or no time doing these tasks. So far as husking and transport of grains to home is concerned we found a significant difference between the male and female workers implying that female ones spend most of the time in doing these activities than their male counterparts that spend little or no time for it.

Table 5: Paired sample t-test (Own labour of the household)									
Pairs	Activities	Paired difference			90% confidence interval of the difference		T	Df	Sig. (2-tailed)
		Mean	S.D	Std. Error Mean	Lower	Upper			
Pair 10	Harvesting (own)	.704	5.394	.306	.197	1.212	2.292	307	.023
Pair 11	Threshing (Own)	1.944	4.466	.263	1.510	2.379	7.390	287	.000
Pair 12	Picking (Own)	.232	3.195	.180	-.065	.529	1.287	314	.199
Pair 13	Winnowing (Own)	-.163	2.569	.148	-.408	.081	-1.101	299	.272
Pair 14	Husking (Own)	-2.572	6.107	.372	-3.187	-1.985	-6.909	268	.000
Pair 15	Storing (Own)	.536	3.154	.207	.195	.878	2.596	232	.010
Pair 16	Transporting to Home (Own)	-1.242	6.819	.390	-1.885	-.599	-3.186	305	.002
Pair 17	Guarding the Crop (Own)	3.804	13.328	.879	2.353	5.256	4.329	229	.000
Pair 18	Selling Goods in the Market (Own)	2.486	11.355	.863	1.058	3.193	2.879	172	.000

Source: Compiled and Calculated from Field survey 2016

### Post farming activities and household chores:

In Table 6 we have depicted the time utilisation pattern of male and female labourers in post farming and household chores. In the activities like cutting of fodder, preparation of feed, grazing, shopping for household requirements, churning we found that there is no significant difference between the male and the female workers. Therefore they spend more or less equal time in performing these activities. So far as feeding, medical treatment and caring of elderly persons is concerned we found that there is a significant difference between the male and the female members which proves that male workers spend entire time in carrying out these activities while female workers spend little or no time in this. In milking cattle and caring for children we found that there is significant difference between the male and female workers resulting in female workers spending most of the time in it while male persons spend very little or no time in it. In cleaning of utensils there is no significant difference between male and female revealing that female labourers spend more time than male labourers.

<b>Table 6: Paired Sample t-test (Own Labour of the Household)</b>									
Pairs	Activities	Paired Difference			90% confidence interval of the difference		T	Df	Sig.(2-tailed)
		Mean	S.D	Std. Error Mean	Lower	Upper			
Pair19	Cutting of Fodder (own)	-.06251	.62847	.05237	-.14921	.02422	-1.193	143	.235
Pair 20	Preparation of Feed (own)	-.12176	2.17059	.17902	-.41811	.17458	-.680	146	.497
Pair 21	Feeding (own)	-.28202	1.74501	.14107	-.51550	-.04854	-1.999	152	.047
Pair22	Grazing (own)	-.11190	3.29276	.23951	-.50781	.28401	-.467	188	.641
Pair23	Milking cattle (own)	.19582	.76239	.08984	-.34557	-.04608	-2.180	71	.033
Pair 24	Medical treatment (own)	.15788	.71278	.08175	.02172	.29405	1.931	75	.057
Pair25	Cooking (own)	-1.3635	1.5111	.2277	-1.7465	-.9807	-5.986	43	.000
Pair26	Cleansing utensils (own)	-1.7500	4.2238	1.2132	-3.9397	-.4398	-1.435	11	.179
Pair27	Washing clothes (own)	-.0500	.8967	.2396	-.4744	.3745	-.209	13	.838
Pair28	Care of children (own)	-.8271	3.4291	.3890	-1.4612	-.1931	-2.171	80	0.33
Pair 29	Care for elderly person (own)	.2758	.7565	.0808	.1413	.4103	3.412	82	.001
Pair30	Shopping for HHs requirement (own)	-.1000	6.5425	.5510	-1.0123	.8123	-.181	140	.856
Pair31	Cleaning of grains (own)	-.9972	5.8291	.4809	-1.7930	-.2014	-2.074	146	.040
Pair32	Washing of grains (own)	-.3201	2.7318	.2405	-.7187	.0782	-1.331	128	.186
Pair33	Churning (own)	-.3817	4.1612	.5612	-.3208	.5573	-.681	54	.499

Source: Compiled and Calculated from Field Survey 2016

The results of paired sample t- test on various agriculture and allied activities is now observed on the hired labourers is depicted in the table below which is subdivided into pre- farming and farming activities.

#### **Pre-farming activities:**

In the Table 7 we have shown the various agriculture activities performed by hired male and female labourers in pre-farming activities. It is evident from the table that in purchasing of seeds, fertilisers, pesticides and fuel there is no significant difference between male and female labourers. Thus we can say that they spend more or less equal time in doing these activities. Similarly in cleaning of land, levelling we found no such significant difference between male and female labourers. It means they devote equal time in performing these activities. So far as sowing and weeding is concerned we found that there is a significant difference between the male and female workers. In these activities female workers devote more time than male workers. Ploughing is the task where we found that the male labourers devote entire time in doing this activity where female workers hardly give their time.

<b>Table 7 : Paired Sample t-test (Hired Labour of the Households)</b>									
Pairs	Activities	Paired Difference			90% confidence interval of the difference		t	Df	Sig. (2-tailed)
		Mean	S.D	Std. Error Mean	Lower	Upper			
Pair 1	Purchasing seeds(Hired)	.000	.347	.043	-.070	.071	.000	67	1.000
Pair 2	Purchasing fertilisers and pesticides (Hired)	.153	.556	.153	-.121	.429	1.000	12	.337
Pair 3	Buying fuel (Hired)	3.334	11.547	3.334	-2.654	9.321	1.000	11	.339
Pair 4	Cleaning of Land (Hired)	.301	2.558	.573	-.688	1.288	.525	19	.606
Pair 5	Ploughing(Hired)	4.674	4.865	.768	3.378	5.972	6.078	39	.000
Pair 6	Levelling (Hired)	-.067	3.035	.784	-1.447	1.313	-.085	14	.933
Pair 7	Sowing(Hired)	10.296	17.528	2.080	-13.763	-6.828	-4.949	70	.000
Pair 8	Watering and use of fertilisers and pesticides	-4.714	15.130	3.302	-10.409	.980	-1.428	20	.169
Pair 9	Weeding (Hired)	-6.383	7.374	.639	-7.443	-5.324	-9.984	132	.000

Source: Compiled and Calculated from Field Survey 2016

### Post- farming activities:

From the above Table 8, it is evident from the calculation that in picking, sowing, transporting

<b>Table 8: Paired Sample t-test (Hired Labour of the Households)</b>									
Pairs	Activities	Paired Difference			90% confidence interval of the difference		T	Df	Sig.(2-tailed)
		Mean	S.D	Std. Error Mean	Lower	Upper			
Pair 10	Harvesting (Hired)	-4.964	6.808	.533	-5.843	-4.084	-9.335	163	.000
Pair11	Threshing (Hired)	.568	5.574	.721	-.635	1.768	.788	59	.434
Pair12	Picking (Hired)	-.831	2.681	.367	-1.448	-.213	-2.255	52	.028
Pair13	Winnowing (Hired)	.758	2.642	.491	-.077	1.594	1.547	28	.133
Pair14	Husking (Hired)	.178	1.555	.248	-.241	.598	.721	38	.475
Pair15	Storing (Hired)	.614	2.773	.545	-.312	1.543	1.132	25	.268
Pair 16	Transporting to Home (Hired)	2.066	4.534	.827	.661	3.472	2.497	29	.018
Pair17	Guarding the crop (Hired)	.523	2.317	.504	-.347	1.394	1.037	20	.312
Pair 18	Selling goods in the Market (Hired)	-.036	.438	.085	-.181	.106	-.440	26	.663
Pair19	Fetching Fodder (Hired)	1.50501	3.27133	.73148	.24017	2.76985	2.057	19	.054
Pair 20	Cleaning of animals (Hired)	1.40001	.89442	.40000	.54725	2.25273	3.500	4	.025
Pair 21	Medical treatment (Hired)	-.168	.409	.166	-.504	.169	-1.000	5	.363
Pair22	Grazing (Hired)	-.4285	1.1338	.4287	-1.2613	.4043	-1.000	6	.356

Source: Compiled and Calculated from Field Survey 2016



grains to home, fetching fodder, cleaning of animals the hired male labourers spend maximum time in doing these activities whereas the hired female labourers spend a little or no time in doing these activities. Similarly there is a significant difference between the male and female workers so far as weeding and harvesting is concerned. In these activities women devote more time than their male counterparts. In rest of the activities we didn't find any significant difference between male and female labourers. It concludes that they devote equal time in performing these activities.

### Conclusion:

Role of women is paramount towards agriculture. But due to limited choices provided to female workers and lacking mobility there is growing marginalisation and feminisation of agriculture which make their life miserable. So agriculture being the most unorganised sector and main alternative to subsistence living, women in rural areas mostly prefer agriculture as their livelihood.

The National Policy based on agriculture has acknowledged the significance of gender issues in agricultural development programmes so far as the role of women as farmers, cultivators, livestock rearing, technology users, marketing managers, and as agricultural labourers is concerned. Even though, women devote their time and energy for longer hours in doing hardest part of the agricultural activity and add considerably to household income, they are not accepted as workers by the society and their family as well. But in reality women work longer hours than men based on the type of work they are involved in. They are mostly manual work.

The research has revealed that farm women spend most of their time in doing those activities which were non-mechanized and involve drudgery. The study also shows that women are involved mostly in pre and post-farming activities that are tedious and involve hard work. In order to remove the hardship of women in agriculture we must impart training programmes to them and include women friendly machineries to reduce their menial work and increase the productivity.

## REFERENCES

- Acharya, M. (1982). Time use data and the living standards measurement study. Living Standards Measurement Study (LSMS) Working Paper, No. 18. Washington, D.C.: World Bank.
- Bharath Kumar *et al.* (2011). Time utilization pattern and drudgery of horticultural farmers; *I.J.E.M.S.*, **2**(2) : 93-96.
- Borgohain, A. and Akand, A.H. (2011). Time utilization pattern of tribal women in animal husbandry. *Indian Res. J. Ext. Educ.*, **11** (1): 50-56.
- Das, Lipishree (2015). Work participation of women in agriculture in Odisha. *IOSR J. Humanities & Soc. Sci.* (IOSR-JHSS), **20** (7) Ver. III : 66-78
- Ferber, M.A. and Spaeth, J.L. (1984). Work characteristics and male female earning gap. *American Economic Review*, **74** (3) : 262-263.
- Lodha, N. (2006). Tribal women's work structure and time utilization pattern in subsistence production. *Indian Res. J. Ext. Educ.*, **6** (3): 1-5
- Nwosu, C.S. and Onyeneke, R.U. (2012). Socioeconomic analysis of rural women's time utilization on farm, non-farm and leisure activities in Ohaji/Egbema local government area of Imo State, Nigeria; *J. Agricultural Economics & Development*, **1**(4) : 75-79.
- Rais, M. *et al.* (2013). Economic assessment of rural women involved in agriculture and livestock farming activities. *Wudpecker J. Agric. Res.*, **2**(4) : 115 – 121.

- Shilparani, M.S. (2007). A study on the perception of farm women about the efficiency of selected drudgery reduced farm implements. M.Sc. (Ag.) Thesis, University of Agricultural Sciences, Bangalore.
- Signal, S. (1989). Women's Work Pattern and Economic Contribution to Family Resource Development in Rural Households of Haryana. Unpublished Doctoral Thesis. Baroda: M.S. University, Baroda
- SOFA Team and Cheryl Doss (2011). The role of women in agriculture. ESA Working Paper No. 11-02 March 2011 Agricultural Development Economics Division the Food and Agriculture Organization of the United Nations [www.fao.org/economic/esa](http://www.fao.org/economic/esa).
- Srivastava, J.C. (1985). Harnessing technology for improving the quality of life of rural women. In: Women and Technology, pp. 38-74. Jain, C. (Ed). Rawat Publications, Jaipur.
- Varma, S.K. (1992). Women in agriculture: A socio economic analysis. New Delhi: Concept Publishing Company.

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