



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Vol XXV
No. 3

ISSN 0019-5014

CONFERENCE
NUMBER

JULY-
SEPTEMBER
1970

INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF
AGRICULTURAL ECONOMICS,
BOMBAY

TABLE V—LABOUR REQUIREMENT AND COST FOR IMPROVED AND LOCAL COTTON AND PADDY

Labour	Cotton			Paddy			
	Improved	Local	Average				
(1)	(2)	(3)	(4)	(5)			
Men	Permanent	Hours	.. 54.40	27.66	43.87	107.86	
		Wages	.. 27.92	9.88	20.75	61.75	
	Casual	Hours	.. 173.93	74.73	134.68	235.65	
		Wages	.. 67.72	28.17	52.08	111.78	
	Family	Hours	.. 554.75	196.15	412.25	764.85	
		Wages	.. 224.28	73.67	165.18	314.44	
	Total	Hours	.. 783.08	298.54	590.80	1,108.36	
		Wages	.. 319.92	111.72	237.21	487.97	
	Women	Permanent	Hours	.. —	—	—	—
			Wages	.. —	—	—	—
Casual		Hours	.. 202.40	143.61	179.88	158.02	
		Wages	.. 71.50	49.40	63.01	56.42	
Family		Hours	.. 277.06	217.95	254.99	299.89	
		Wages	.. 91.33	81.93	88.19	105.16	
Total		Hours	.. 479.46	361.56	434.87	457.91	
		Wages	.. 162.83	131.33	150.80	161.58	
Total labour hours		1,262.54	660.10	1,025.67	1,566.27	
Total wages (Rs.)		482.75	243.05	388.01	649.55	
Average wage per hour (Re.)	0.38	0.37	0.37	0.41		
Share of family labour in total wage (per cent)	65	64	65	64		

It can, therefore, be summarised that of the five crops, groundnut, bajri, wheat, jowar and cotton, only improved varieties of wheat used less labour and could give less family labour earnings than those under local varieties.

INTER-REGIONAL DIFFERENCES IN AGRICULTURAL LABOUR USE, EFFICIENCY AND WAGES

A. C. GANGWAR

Assistant Professor
Department of Economics and Sociology
Haryana Agricultural University, Hissar

Agricultural labour constitutes about 40 per cent of the total cost of the inputs used in crop production. The peculiar characteristic of agricultural labour is its abundant supply on most of the farms, except during the peak operation period when the majority of farmers experienced scarcity of farm labour. Owing to its peculiar characteristic, agricultural economists have been known to state : “Mana-

gement of the farm is more nearly proportionate to labour than to other factors of production." In India most of the labour used on the farm is family labour. Since the opportunity cost of family labour is relatively low, efficient use of this resource sometimes does not get the same emphasis as any other factor inputs which involve direct expenses. In reality family labour has also opportunity cost, therefore, all type of labour should be properly managed. In this study an attempt has been made to find out the labour utilization pattern, its efficiency and wages received by farm labour in the production of major crops. The specific objectives of this study are : (1) to find out the inter-regional differences in labour utilization in the production of a few major crops; (2) to examine the efficiency of labour use in the production of selected crops; (3) to study the variation in agricultural wages among different States; and (4) to study the variation in labour use over time.

Methodology

Information on the labour use has been gathered from the Farm Management Studies of the Directorate of Economics and Statistics, Ministry of Food and Agriculture, New Delhi¹ and the survey conducted by the National Council of Applied Economic Research.² Labour efficiency was worked out as follows:

$$= \frac{\text{Total output of the crop per hectare}}{\text{Total number of labour days required for the crop per hectare}}$$

This study is confined to four crops, namely, rice, jowar, wheat and gram.

Inter-regional Differences in Labour Use

Employment of human labour per hectare showed wide variation as between different States in India (Table I). It was largest in the case of rice and lowest in the case of wheat. For rice, the average number of human labour days used per hectare was as low as 67 days in Orissa, as against 177 days reported from Uttar Pradesh. More than 150 labour days per hectare were reported in Kerala, Tamil Nadu and Uttar Pradesh, while less than 100 labour days were reported in Assam, Maharashtra and Orissa. In Tamil Nadu labour utilization was large for sowing and harvesting operations, whereas in Kerala and Uttar Pradesh it was relatively more for preparatory tillage and harvesting. The variation in hired labour utilization was also very high. Hired labour accounted for more than 90 per cent of the total labour used in Kerala and Tamil Nadu and about 30 per cent in Andhra Pradesh and Orissa.

Similarly for jowar there existed wide variations in the total labour used per hectare and in the hired labour employed. It varied from 80 labour days in Andhra Pradesh to 36 labour days in Madhya Pradesh. The percentage of hired labour employed was highest in Mysore (54) and lowest in Madhya Pradesh (25).

1. Studies in the Economics of Farm Management, U.P., Bombay, Madras, West Bengal, etc., Directorate of Economics and Statistics, Ministry of Food and Agriculture, Government of India, 1957.

2. Structure and Behaviour of Prices of Foodgrains, New Delhi, 1967, Table Nos. 49, 50, 73, 74, 89, 90, 108 and 109.

As for wheat the inter-regional variation in labour utilization per hectare was relatively less as compared to other crops. It ranged from 34 days in Madhya Pradesh to 58 days in the Punjab and Uttar Pradesh. Hired labour employed constituted 30 per cent of the total labour used in Punjab, 33 per cent in Uttar Pradesh, 36 per cent in Madhya Pradesh and 38 per cent in Haryana. For this crop labour was used mostly for preparatory tillage and harvesting and threshing. Owing to the shattering nature of the wheat crop, hired labour was employed by the farmers in all the States for harvesting, which resulted in less variation in the utilization of hired labour.

TABLE I—LABOUR UTILIZATION PER HECTARE CROPWISE : 1967-68

(in days)

State	Rice			Jowar			Wheat			Gram		
	Hired	Fa- mily	Total	Hired	Fa- mily	Total	Hired	Fa- mily	Total	Hired	Fa- mily	Total
Assam	24 (35.5)	68	92									
Andhra Pradesh	81 (30)	20	101	26 (32)	59	81						
Haryana							20 (32)	32	52	7.0 (26.5)	21.0	28.0
Kerala	164 (96)	7	171									
Madhya Pradesh	64 (57)	49	113	9 (25)	27	36	13 (36)	21	34	5.0	15.0	20.0
Mysore				25 (54)	15	40						
Orissa	21 (30)	47	68									
Punjab							17 (30)	41	58			
Rajasthan				25 (34)	49	74				6 (21)	21	27
Tamil Nadu	156 (91.5)	13	169									
Uttar Pradesh	46 (26)	131	177				18 (33)	40	58	10 (22)	36	46
West Bengal	76 (50.3)	75	151									

Note : Figures in brackets represent percentage of the total labour use.

Labour utilization for gram ranged from 20 days per hectare in Madhya Pradesh to 46 days in Uttar Pradesh. However there was very little variation in the utilization of hired labour among various States.

From the above discussion it is clear that in the cultivation of rice there was large variation in the utilization of family and hired labour in comparison to the other three crops. This was partly due to the great diversity in the type of land where paddy was cultivated and partly due to the fact that most operations in paddy cultivation were not amenable to mechanization.

Efficiency in Labour Utilization

For the purpose of inter-regional comparison, efficiency was measured in terms of output per labour day. The output per labour day in the cultivation of rice varied from 0.06 to 0.24 quintals (Table II). It was lowest in Kerala and highest in Andhra Pradesh. In all the States where labour utilization was more than 150 days per hectare, the average productivity was low. This was due to excessive labour use and unsatisfactory labour management.

TABLE II—OUTPUT PER LABOUR DAY : 1967-68

(in quintals)

State	Rice	Jowar	Wheat	Gram
Assam	0.14	—	—	—
Andhra Pradesh	0.24	0.05	—	—
Haryana	—	—	0.20	0.195
Kerala	0.06	—	—	—
Madhya Pradesh	0.09	0.11	0.07	0.13
Maharashtra	0.14	0.14	—	—
Mysore	—	0.08	—	—
Orissa	0.18	—	—	—
Punjab	—	—	0.285	—
Rajasthan	—	0.05	—	0.16
Tamil Nadu	0.13	—	—	—
Uttar Pradesh	0.96	—	0.13	0.13
West Bengal	0.83	—	—	—

In the case of jowar, the States fall into two distinct groups in terms of labour utilization efficiency. The first group included Andhra Pradesh, Rajasthan and Mysore where the output per worker was 0.05, 0.05 and 0.08 quintals, respectively. In the other group consisting of States like Madhya Pradesh and Maharashtra the output per worker was much higher, being 0.11 and 0.14 quintals, respectively. The variation among different States was mainly due to variation in yield per hectare.

Similarly for wheat the inter-State variation in the productivity of labour was significantly high. It ranged from 0.07 quintals per worker in Madhya Pradesh to 0.285 quintals per worker in the Punjab. It was lowest in Madhya Pradesh even though per hectare labour utilization was lower (34 days) as compared to the Punjab where per hectare labour utilization was much higher (58 days). It indicates that the differential in efficiency was mainly due to difference in yield rather than labour use.

In gram there was not much variation in labour use efficiency. The output per worker ranged between 0.13 quintals in Madhya Pradesh and Uttar Pradesh and 0.195 quintals in Haryana.

Variation in Wages

There was great variation in the average wages of agricultural labour for all the crops (Table III). It ranged from Re. 0.62 in Orissa to Rs. 3.04 in Andhra Pradesh in the case of rice, Re. 1.49 in Rajasthan to Rs. 2.54 in Mysore in the case of jowar. The wages for wheat crop ranged from Rs. 2.67 in Madhya Pradesh

TABLE III—AVERAGE WAGES PAID TO LABOUR IN THE PRODUCTION OF MAJOR CROPS : 1966-67

State	Rice	Jowar	Wheat	Gram
Assam	2.78	—	—	—
Andhra Pradesh	3.04	1.66	—	—
Haryana	—	—	4.38	4.29
Kerala	2.50	—	—	—
Madhya Pradesh	1.35	2.03	2.67	2.92
Maharashtra	1.51	2.44	—	—
Mysore	—	2.54	—	—
Orissa	0.62	—	—	—
Punjab	—	—	4.20	—
Rajasthan	—	1.49	—	5.02
Tamil Nadu	2.00	—	—	—
Uttar Pradesh	2.14	—	3.12	2.89
West Bengal	2.19	—	—	—

to Rs. 4.20 and Rs. 4.38 in the Punjab and Haryana, respectively. In the case of gram the lowest wage rate of Rs. 2.89 was reported in Uttar Pradesh and the highest Rs. 5.02 in Rajasthan. The relationship between the output per worker and wages paid to hired labour in the various States was examined for each crop through correlation analysis as follows:

Crop	Value of 'r'	No. of observations used
Rice	-.08	13
Jowar	0.31	7
Wheat	0.65	9
Gram	0.63	6

The value of 'r' was found to be negative in the case of rice and very low in the case of jowar. The correlation between wages and output per worker in the case of wheat and gram was found to be of the same order. The results showed that there was some relationship between the output per worker and wages in the case of wheat and gram, while in the case of rice and jowar, factors other than productivity were important in determining the wages of hired labour.

Variation in Labour Use over Time

Two important crops, rice and wheat were selected to examine the variation in labour use over time, from 1954-55 to 1966-67. For rice West Bengal and for wheat Uttar Pradesh and Punjab were selected for this purpose. In the case of rice the total labour utilization per hectare increased from 85 to 160 days in West

TABLE IV—OPERATIONWISE LABOUR UTILIZATION PER HECTARE : 1954-55 AND 1966-67

		<i>(in days)</i>							
Year		Prepara- tory tillage	Sow- ing	Inter- culture	Manur- ing and fertil- izer use	Irriga- tion	Harvest- ing and thresh- ing	Others	Total
Rice									
West Bengal									
1954-55	21.65 (25)	14.62 (18)	29.25 (34)	—	—	19.76 (23)	—	85.27
1966-67	54.34 (34)	32.05 (20)	14.06 (9)	0.64 (0.3)	1.14 (0.7)	58.22 (36)	—	160.45
Wheat									
Uttar Pradesh									
1954-55	25.44 (30)	4.45 (5)	1.01 (1)	0.50 (0.6)	7.90 (9)	43.72 (52)	1.14 (1.4)	84.16
1966-67	19.37 (25)	4.32 (5.6)	5.73 (7.5)	4.52 (5.9)	2.84 (3.7)	38.92 (50.4)	1.46 (1.9)	77.16
Punjab									
1954-55	17.30 (25)	4.50 (6)	4.94 (7)	1.88 (3)	10.00 (14)	31.38 (45)	—	70.00
1966-67	20.06 (32)	4.80 (8)	8.10 (13)	4.32 (7)	13.77 (22)	10.74 (17)	0.89 (1)	62.68

Note : Figures in brackets represent percentage of the total labour use.

Bengal. Operationwise break-up of labour use showed that the use of labour in preparatory tillage, sowing and harvesting had increased from 25, 18 and 23 per cent to 34, 20 and 36 per cent, respectively. The increase in labour use for preparatory tillage and sowing was mainly due to the changes in the method of cultivation, *i.e.*, from ordinary broadcasting method to Japanese method of cultivation. In 1954-55 farmers of this area were not using any labour for manuring and irrigation but in 1966-67 much labour was used for these operations also. On the other hand, labour requirements for interculture seem to have declined owing to better weed control and increased use of weedicides, etc. The labour requirements for harvesting and threshing increased owing to the higher yield per hectare.

In the case of wheat labour utilization per hectare seemed to have declined in the Punjab as well as in Uttar Pradesh indicating a significant change in technology. An important feature of this technology is that it resulted in more intensive use of labour for operations like sowing, manuring and interculture, whereas labour use per hectare declined for irrigation, harvesting and threshing due to increasing use of mechanical power.

Thus, this study seems to indicate that partial mechanization of wheat farms has not resulted in the displacement of labour, but only its replacement. With the adoption of new technology in agriculture some labour was displaced which got itself absorbed in other operations connected with farming.

Summary

(There was considerable variation in labour use in the cultivation of rice in India, while in the case of jowar, wheat and gram the variation was less. Similarly, productivity of labour also exhibited wide variation among different States in the cultivation of rice, jowar and wheat while in the case of gram the inter-State variation was much less.

The wage rates for *rabi* crops were generally higher than that of *kharif* crops in all the States. However, agricultural wages varied widely as between different States. There was no significant correlation between wages and output in the case of rice and jowar while wheat and gram showed some positive relationship between wages and output.

There was significant change in labour use over time in the cultivation of rice. The use of total labour days per hectare declined in the case of wheat in Uttar Pradesh and Punjab during 1954-67. An important feature of labour use in Uttar Pradesh was the decrease in labour use for the preparatory tillage and harvesting and increase in other operations. In the case of Punjab there was a sharp fall in labour use for harvesting and threshing and significant increase in labour use for other operations. This ultimately resulted in smaller decline in the total labour use. It indicates that mechanization has not created as much unemployment as it was alleged. Most of the displaced labour was absorbed in other operations, *i.e.*, interculture, irrigation and manuring. Thus the adoption of new technology has not resulted in any significant reduction in the total labour utilization, but it has certainly increased labour productivity.