



**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](mailto: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 XXI  
No. 1

ISSN 0019-5014

JANUARY-  
MARCH  
1966

# INDIAN JOURNAL OF AGRICULTURAL ECONOMICS



INDIAN SOCIETY OF  
AGRICULTURAL ECONOMICS,  
BOMBAY

## EMPLOYMENT AND PRODUCTIVITY OF AGRICULTURAL WORKING FORCE

B. R. KALRA

*Research Officer  
Office of the Registrar General, India  
Ministry of Home Affairs  
Government of India, New Delhi*

The object of the paper is to highlight some cross-sectional and time variations in the employment of agricultural working force as revealed by 1961 Census results. According to 1961 Census, there were 131 million agricultural workers in 1961 who constituted 72 per cent of the total working force. Proper and effective utilization of agricultural working force is crucial to a scheme of agricultural development and social welfare. However, as compared to other factors in agriculture such as land and capital, human factor was not given due consideration in the scheme of socio-economic development.

One of the most important aspects of agricultural working force, both from the point of view of formulating conceptual design for measurement of employment in agriculture as well as for the purposes of deriving policy implications, is the fact that 85 per cent of agricultural working force is family workers. Table I based on 1961 Census brings out the numerical importance of family workers in agriculture.

TABLE I—PERCENTAGE OF FAMILY WORKERS TO TOTAL AGRICULTURAL WORKERS—  
ALL-INDIA : 1961 CENSUS

Size of land (Class ranges in acres)					Percentage of family workers to total workers
All sizes	..	..	..	..	85.36
Less than 1	..	..	..	..	93.84
1.0 — 2.4	..	..	..	..	90.41
2.5 — 4.9	..	..	..	..	87.42
5.0 — 7.4	..	..	..	..	85.21
7.5 — 9.9	..	..	..	..	84.36
10.0 — 12.4	..	..	..	..	83.13
12.5 — 14.9	..	..	..	..	81.95
15.0 — 29.9	..	..	..	..	80.07
30.0 — 49.9	..	..	..	..	74.96
50.0 and above	..	..	..	..	63.05
Unspecified	..	..	..	..	96.22

Conceptually, the table rightly justifies the adoption of Household Schedule in 1961 Census for studying the institutional, structural and operational characteristics of Indian agriculture, with a household or a holding as a unit of enquiry. The concepts for the Household Schedule were also designed to fit into this approach. As regards the results, the preponderance of family workers in agriculture has two-fold implications. Firstly, it emphasizes the role of social and institutional factors in shaping the structure of Indian agriculture. Secondly, any programme aimed at agricultural development through structural and operational changes has to reckon with the social and economic characteristics of family labour.

In so far as the first aspect is concerned, there is a close identity between the size and distribution of ownership and operated holdings in respect of all the States, as revealed by the data collected by the National Sample Survey (NSS). Average size of operational holding, labour input per acre, and average gross value of output per acre, per operational holding and per worker are worked out in Table II.

TABLE II

State			Average size of agricultural operational holding (1960-61) (acres)	Labour input per acre (1960-61)	Gross value of output per acre (1960-61) (Rs.)	Gross value of output per holding (1960-61) (Rs.)	Gross value of output per worker (1960-61) (Rs.)
1			2	3	4	5	6
Andhra Pradesh	..	..	6.64	0.48	159.20	1,057	331.39
Assam	..	..	4.13	0.65	249.00	1,028	382.20
Bihar	..	..	3.99	0.56	168.99	674	299.88
Gujarat	..	..	11.98	0.25	132.88	1,592	529.98
Jammu & Kashmir	..	..	3.87	0.65	223.63	865	343.89
Kerala	..	..	1.96	0.75	332.73	652	443.59
Madhya Pradesh	..	..	10.01	0.30	118.63	1,187	393.11
Madras	..	..	3.89	0.58	280.14	1,090	482.04
Maharashtra	..	..	13.06	0.30	127.68	1,668	419.95
Mysore	..	..	9.65	0.32	119.56	1,154	373.01
Orissa	..	..	4.61	0.40	193.46	892	481.01
Punjab	..	..	11.17	0.19	152.88	1,708	787.21
Rajasthan	..	..	13.79	0.22	75.98	1,062	341.04
Uttar Pradesh	..	..	4.60	0.38	152.89	703	399.28
West Bengal	..	..	3.88	0.41	276.29	1,072	671.92
Coefficient of variation	..	..	54.13%	39.53%	38.23%	29.79%	28.88%

Note : The figures of output have been worked out from Agricultural Income by States, 1960-61 by the National Council of Applied Economic Research, New Delhi, 1963. The figures do not include output from plantations.

It is clear from col. (2) and (3) of the table that there is an inverse correlation between the average size of an operational holding and labour input per acre (coefficient of correlation being  $(-)$  0.87) so that the smaller the size of the operational holding, the greater is the intensity of labour input and *vice versa*.

The variation in the intensity of labour input can be interpreted in terms of work and income criteria. Farm management studies undertaken by the Ministry of Food and Agriculture have indicated that labour input per acre is relatively higher in irrigated as compared to unirrigated areas and in areas covered by certain crops such as rice and cotton than wheat, jowar, bajra, etc. For certain reasons it is difficult to interpret regional distribution of agricultural working force in India on the basis of work approach only. Firstly, the work approach does not explain the disparity in the extent of labour input among different size-groups of holdings with homogeneous natural resources and cropping patterns. This aspect is examined in some details in a subsequent paragraph. Secondly, there have been large additions, during the last few decades, to manpower in agriculture at varying rates in different areas but there has not been any significant change in the cropping pattern or irrigation facilities warranting such additions. According to the Planning Commission, 3 million additional employment opportunities were created under the agricultural schemes of the first two Plans, but 1961 Census has recorded 32.5 million additional workers in agriculture during 1951-61. Differential rates of labour inputs under varying conditions of cropping patterns and irrigational facilities recorded by the farm management studies need not necessarily suggest differential labour requirements from agronomic point of view. Thirdly, higher productivity per acre through additional inputs including labour, need not necessarily be accompanied by higher productivity per worker.

Table II indicates, on the one hand, a close inverse correlation between size of holding and productivity per acre (coefficient of correlation being  $(-)$  0.83) and on the other, a direct correlation between productivity per acre and labour input per acre (coefficient of correlation being 0.80). Areas of high yield resulting from better quality of soil, assured rainfall, irrigation facilities, etc., could provide livelihood to larger number of families and taking a long term historical perspective, there has been a shift of population from low yielding areas to high yielding areas. The pressure of population in high yielding areas went on rising through sub-division and fragmentation of holdings.<sup>1</sup> The table verifies the fact that while there is a high coefficient of variation in the case of average size of operational holding in terms of acreage, the disparity narrows down appreciably in so far as output per holding is concerned. Again, the coefficient of variation of output per worker is much less than that of output per acre. It is more meaningful to compare between States the value of output per holding than the size of a holding in terms of acreage. A high level of output per holding and per worker is a better indication of agricultural prosperity of a region than output per acre. Unless a high yield per acre is accompanied by a corresponding high yield per holding and per worker, the economy will not yield surpluses (and also the marketable surplus) for re-investment within or outside agriculture. It is interesting to note that in all the three States of Punjab, Gujarat and Maharashtra which are foremost in recording the highest income per holding, the proportion of population dependent on agriculture is much below the all-India average.

1. Relationship between size of holding and productivity was worked out in a paper on "Regional Variations in Policy Regarding Size of Agricultural Holding," submitted by the author for the 23rd All-India Agricultural Economics Conference in 1963 and published in this *Journal*, Vol. XX, No. 2, April-June 1965.

A low coefficient of variation of output per worker, in spite of large inter-State variations in yield per acre, suggests a fairly equitable distribution of labour if judged from income point of view. It further holds out that even in areas of high labour intensity marginal productivity per worker should not be negative or zero, productivity per acre in such cases being always on the high side. However it cannot be denied that some regional disparities do persist and State differences in value of output per worker and per holding are not too insignificant. For example, in Bihar and Uttar Pradesh as a result of lack of employment opportunities in non-agricultural sector, a low gross income per acre could not check more and more population depending on land for their livelihood, thereby precipitating the income per cultivating household and per worker. It is, therefore, not surprising that in Bihar and Uttar Pradesh, the proportion of working force in agriculture is 77 per cent and 75 per cent respectively. The level of under-employment should also be high as compared to other States. Inter-regional mobility of labour, necessitated by regional variations in the levels of economic development, may be hampered by diversities of language, culture, climate, technology and agricultural practices and laws.

The above cross-sectional analysis is not too realistic inasmuch as it is based on State averages of inputs and outputs, which vary not only from region to region but even from holding to holding within the same region. Table III brings out the distribution of land and labour, according to size-groups of holdings at all-India level.

TABLE III

Size of land (Class ranges in acres)	Percentage distribution of house- holds	Percentage distribution of area	Percentage distribution of total workers	Family workers per house- hold	Hired workers per house- hold
1	2	3	4	5	6
All sizes .. ..	100.00	100.00	100.00	2.35	0.40
Less than 1 .. ..	11.07	0.46	7.07	1.65	0.11
1.0 — 2.4 .. ..	23.47	4.80	18.87	2.00	0.21
2.5 — 4.9 .. ..	22.72	10.49	21.59	2.29	0.33
5.0 — 7.4 .. ..	14.24	11.43	15.13	2.50	0.43
7.5 — 9.9 .. ..	6.74	7.66	7.70	2.65	0.49
10.0 — 12.4 .. ..	6.19	9.09	7.42	2.75	0.56
12.5 — 14.9 .. ..	2.61	4.71	3.34	2.89	0.64
15.0 — 29.9 .. ..	8.52	23.82	11.65	3.01	0.75
30.0 — 49.9 .. ..	2.70	13.68	4.27	3.27	1.09
50.0 and above .. ..	1.35	13.85	2.66	3.42	2.00
Unspecified .. ..	0.39	0.01	0.30	2.06	0.08
Concentration ratio of area (cols. 2 and 3) = 0.58					
Concentration ratio of workers (cols. 3 and 4) = 0.48					

Source : Census of India, 1961.

As may be seen, the distribution of workers closely follows that of cultivated holdings but not that of cultivated area. Nevertheless, the workers are less concentrated than the area because, as is evident from cols. (5) and (6) of the table, the quantum of both family labour and hired labour per household increases with increase in the size of holding. However, it can be assumed that about 48 per cent of the workers (and 57 per cent of the households) cultivating 57 per cent of the holdings of less than 5 acres each, covering among themselves only 15 per cent of the cropped area, should be severely or moderately under-employed, if we do not take into account the non-farm employment.

The table depicts the combined impact of inter-regional and intra-regional variations in the size and distribution of holdings upon the pattern of labour utilization. We have earlier noticed that inter-regional disparities in the size of holding, and for that matter in the distribution of agricultural workers, are the concomitant of the variations in the input and output factors. However, within a State or region, the distribution of holdings and agricultural workers cannot be rationalised on the basis of income or work criterion but is "still the relic of tenurial settlements made by the States since early periods. The distribution was further skewed by disparity in the social and economic opportunities enjoyed by different sections of population in different regions of the country and the absolute right of transfer and mortgage enjoyed till recently by the landowners."<sup>2</sup> According to farm management studies, there is nothing conclusive to suggest that, within a region having homogeneous natural resources and cropping pattern, yield per acre varies according to the size of holding, the natural corollary being that as we move from larger to smaller holdings, productivity per worker declines in proportion to the increase in the number of workers. A scheme for redistribution of land through ceiling on existing holdings may mainly result in a more equitable distribution of agricultural incomes among the cultivating households without materially affecting the productivity of land. Productivity may, however, improve if, firstly the large-sized holdings are labour starved and secondly, the rate of saving on small holdings is reduced, through repeated sub-divisions, below the level necessary to maintain the existing stock of capital.

We may now check our findings against the trends in the agricultural working force during 1951-61. Since, as compared to female workers, the enumeration of male workers is less susceptible to conceptual changes adopted at the time of census, it may be desirable to restrict the comparison to male workers only.<sup>3</sup> Table IV gives a State-wise picture of increase in cultivators, agricultural labourers and population between 1951-61 for various States.

Table IV depicts large variations in the rates by which agricultural manpower has gone up in different States. Nevertheless, some broad patterns are discernible. The States of Andhra Pradesh, Gujarat, Madras, Mysore, Orissa and West Bengal have recorded an abnormal increase in the number of agricultural workers. With the exception of Assam, the rate of increase was higher among cultivators than agricultural labourers. In other States, the growth in agricultural working force was more or less of the same order as that of population. Here too, Kerala,

2. "Regional Variations in Policy Regarding Size of Agricultural Holding," *Op. cit.*

3. This was experienced in other countries too and international comparison is generally confined to male workers alone.

TABLE IV.—PERCENTAGE INCREASE OR DECREASE (—) OF MALE AGRICULTURAL WORKERS AND MALE POPULATION IN 1961 OVER 1951

State					Cultivators (I)	Agricultural labourers (II)	Agricultural workers (I and II)	Male population
Andhra Pradesh	..	..	..	..	37.26	24.34	32.51	15.36
Assam	..	..	..	..	35.30	103.22	38.42	31.50
Bihar	..	..	..	..	19.83	20.08	19.90	19.55
Gujarat	..	..	..	..	42.68	33.87	40.88	25.14
Kerala	..	..	..	..	13.25	(—)27.13	(—)5.74	25.14
Madhya Pradesh	..	..	..	..	37.19	(—)19.83	20.81	24.93
Madras	..	..	..	..	50.17	18.67	40.66	13.26
Maharashtra	..	..	..	..	31.09	9.72	23.67	23.89
Mysore	..	..	..	..	46.94	24.72	42.11	22.04
Orissa	..	..	..	..	34.64	21.87	31.85	21.09
Punjab	..	..	..	..	13.73	2.27	11.99	25.50
Rajasthan	..	..	..	..	31.45	(—)5.91	28.80	27.30
Uttar Pradesh	..	..	..	..	10.95	63.25	15.56	16.72
West Bengal	..	..	..	..	40.06	28.54	36.74	31.85
All-India	..	..	..	..	28.99	16.72	26.24	22.02

Madhya Pradesh and Rajasthan recorded a net decline in the number of agricultural labourers. Uttar Pradesh, however, shows an opposite trend by registering relatively larger increase in agricultural labourers. The Second Agricultural Labour Enquiry has recorded a declining proportion of agricultural labour households to all rural households between 1953-54 to 1960-61 in respect of all the States except Assam and Uttar Pradesh and, in this respect, the Census results tally with the findings of the Second Agricultural Labour Enquiry.

The State-wise variations may be broadly explained thus :—

(1) Abnormal increase in agricultural workers in Assam and West Bengal may be mainly attributed to phenomenal increase in population on account of natural growth and in-migration. In Assam, there was about 15 per cent increase in the cultivated area between 1951-1961 together with a decline in the number of workers in plantations, forestry and fishing. In West Bengal, the settlement of landless labourers on surplus land acquired under the West Bengal Estate Acquisition Act, on year to year basis, and the enumeration of *bargadars* (share croppers) as cultivators and not as agricultural labourers should also have augmented the number of cultivators in the State.



(2) The implementation of the Bombay Tenancy Act may be partly responsible for pushing up the number of cultivators in the two States of Gujarat and Maharashtra. Under the Act, practically every tenanted holding was liable to be divided half and half between owner and tenant. In Gujarat, the number of agricultural labourers has also equally gone up, which is accompanied by a fairly large decline in the number of workers engaged in dairying and livestock.

(3) An increase in the number of cultivators and a corresponding decrease in that of agricultural labourers witnessed in Rajasthan and Madhya Pradesh is on account of settlement of lands with agricultural labourers either on full ownership or temporary basis. In these two States, there was about 20 to 40 per cent increase in the cultivated area during 1950-51 to 1960-61. According to the Report of the Panel on Land Reforms, 1961, more than 26 lakh acres of cultivable waste land in Rajasthan and 15 lakh acres in Madhya Pradesh were distributed among the landless upto 1961 under the scheme of settlement of agricultural labourers.

(4) In Bihar, Kerala, Punjab and Uttar Pradesh, the rate of increase in agricultural workers is less than the all-India average and the rate of population growth in these States. Barring Punjab, there is little extension in cultivated area. By contrast, the rate of increase among non-agricultural workers is much higher than that of agricultural workers indicating a shift from agricultural to non-agricultural sector. The number of non-agricultural workers increased by 109 per cent in Bihar, 57 per cent in Kerala and by about 35 per cent in Punjab between 1951-61. In Bihar, the workers have mainly gone into livestock, mining and manufacturing industries. In Kerala, the growth is concentrated in educational, health and personal services and also among general labourers and unclassified workers. The last two categories may display a clandestine growth of non-agricultural sector. A sharp decline in agricultural labourers may suggest that *waramdars* (share croppers) were mostly treated as cultivators. In Punjab, there was more than 90 per cent increase in manufacturing industries and the workers in construction have multiplied by one and a half times. In Uttar Pradesh, a sharp rise in the number of agricultural labourers and a comparatively negligible increase in the number of cultivators may be because of the fact that in this State leasing of land is prohibited by law except by persons suffering from a disability. The law, however, allows cultivation of land through hired labour. All the four States under study are marked by the phenomenon of net out-migration of population which may relieve the pressure on land.

(5) In Andhra Pradesh, Madras and Mysore the excessive increase in agricultural workers was mostly conceptual inasmuch as there was under-enumeration of workers in 1951. In these States the Census concepts of 1951 were misconstrued to the effect that unpaid family workers in agriculture were generally enumerated as non-earning dependents (non-workers). The increases otherwise do not accord with the present hypothesis by which these could be explained in terms of operational factors.

The above analysis bears out that a variety of factors have been at play to push up the number of agricultural workers over the last decade or so. These factors are operational, institutional and even conceptual. These could result in changing the size as well as the composition of agricultural working force, the

latter involving a redistribution of workers as cultivators and agricultural labourers. As a result of institutional and social factors, it may not be uncommon that both landlord and his tenant or the landlord and his agricultural labourer or all of them together might have got themselves returned as cultivators in respect of the same parcel of land. However, this tendency was noted at the time of 1951 Census also and was stated to be one of the reasons for the fall in the number of agricultural workers at that time. Large scale transfers of land in recent years in anticipation of ceiling on holdings might be another contributory factor on the institutional side in boosting up the number of cultivators.

It is rather hazardous to interpret the factors which determine the dimensional growth of agricultural labour class. Agricultural labour is the most vulnerable class in the countryside and its number is affected by a variety of factors often moving in opposite directions. The supply of agricultural labourers may increase in areas with rising pressure of population on land. Here also, the situation may be more complex than imagined. It is not easy to predict whether the preponderance of small cultivators-cum-agricultural labourers will manifest itself in Census results in the form of increase in the number of cultivators or agricultural labourers. Here again, the abundance of family labour on small holdings may press down the demand for agricultural labour. But since the supply of agricultural labour is more or less inelastic, the decreased demand for it may only have the effect of depressing wages. This is borne out by the finding of the Second Agricultural Labour Enquiry. Agricultural labour may still continue to compete with family labour but at a lower level.

Agricultural labourers have been affected by various land reform measures no less than the other sections of the rural population. There have been large scale ejections of tenants which relegate them to the position of agricultural labourers but these have frequently resulted in interchange of tenancies on different holdings. The demand for agricultural labourers is generally considered to be more in regions in which land is distributed unevenly and measures directed towards redistribution of land may, therefore, reduce the demand for agricultural labourers. The land tenure data for various States shows that there is some inverse relationship between the extent of area leased out and the number of agricultural labourers. The 1961 results verify the fact that in States where cultivation of land through tenants is prohibited by law, the number of agricultural labourers has gone up. The cumulative effect of the various factors discussed above suggests that the practice of employing hired labour as a system of cultivation has been declining. And this has, perhaps, been the major migrating class from rural areas to the urban areas.

It emerges that the general phenomenon underlying the growth of agricultural working force is, firstly, the rate of labour force growth, which is mainly the function of population growth, and secondly, the extent to which the additional labour force is absorbed in the non-agricultural sector. The *raison d'être* of cross-sectional variations in labour intensity in terms of income and work criteria can not be projected to variations over time. The net earnings per worker in agriculture in 1950-51 were only 36.97 per cent of the net earnings per worker in the non-agricultural sector. It is true that during the transitional stage of economic growth, output per worker is higher in the non-agricultural as compared to the agricultural

sector, but the disparity is gradually narrowed down with the shift of labour force from agricultural to non-agricultural sector. However, it is disquieting to note that in India the disparity has been widening and the net earnings per agricultural worker were further reduced from 36.97 per cent in 1951 to 30.37 per cent of that of non-agricultural workers in 1961. In a recent paper the author<sup>4</sup> spelt out various socio-economic factors which could inhibit inter-sectoral mobility of labour. The most important among them is, perhaps, the institutional factor. A household being the unit of production in agriculture, the employment of a family worker is not subject to the economics of input-output relationship in the same manner as, for instance, the employment of a factory worker in the non-agricultural sector is.

This may be a lesser evil in comparison to a situation in which the surplus labour remained totally unemployed and threatened to disrupt the entire non-agricultural economy. At any rate most of women and child workers who constitute 40 per cent of family workers in agriculture would have remained unemployed on account of social reasons if there were no household sector to afford them productive employment. Sectoral immobility may be coupled with spatial immobility, the latter comprising rural-urban and inter-regional immobility. Tracing the trend of urbanisation over the last 60 years, the author<sup>5</sup> has tried to establish that urbanisation in India has been growth-oriented. In the paper referred to earlier<sup>6</sup> we came across a sordid fact that economic growth has mostly been urban-oriented and occupational shift is generally not possible unless it is accompanied by migration from rural to urban areas. However, various hazards of migration such as housing shortage, disintegration of family and other social and cultural affiliations, competition from city dwellers, etc., may slacken rural-urban migration. Unless some corrective measures are adopted, the economic disparities between agricultural and non-agricultural sectors may perpetuate and even accentuate further.

---

4. "The 1961 Census and Its Implication in Terms of Labour Force Growth, Employment and Income," this *Journal*, Vol. XX, No. 3, July-September 1965.

5. "Occupational Structure of Cities : 1901-1961," *The Economic Weekly*, July 17, 1965.

6. "The 1961 Census and Its Implication in Terms of Labour Force Growth, Employment and Income," this *Journal*, *Op. cit.*