CHAPTER I

INTRODUCTION

1.1 Wage-paid Workers in Indian Agriculture

Agriculture is the largest single industry bearing incidence of around 70 percent of total work-force, while, agricultural labourer is the largest single segment of total workers in India. Agricultural labourers increased from 27.5 million in 1951 to 31.48 million in 1961. In 1971, their number shot up to 47.49 million, constituting 26.33 percent of total workers in India (See table 1.1). Wage-paid agricultural labourers form a substantial proportion of agricultural workers (cultivators and agricultural labourers). The proportion of wage-paid workers in total agricultural workers was 24.03 percent in 1961 and 38 percent in 1971. Agricultural labourers, in absolute as well as in proportion to total workers and to total agricultural workers, have shown a sharp increase. The definitional change pertaining to 'workers' adopted in 1971 census against 1961 is one factor responsible for such a substantial increase. The rapid expansion in the number of job-seekers on limited land seems another major factor. In addition, eviction of land by small and marginal farmers on one or the other ground, has turned them from cultivators to mere agricultural labourers. However, notwithstanding definitional trap, the fact remains that agricultural labourers have swelled over the past decades. According to the Fourth Rural Labour Enquiry 1974-75, estimated number of agricultural labour house-holds shot up from 15.34 million in 1964-65 to 20.74 million in 1974-75.

TABLE 1.1

Proportion of Agricultural Workers to Total Workers in India and Rajasthan 1951 to 1971

INDIA

(Workers in Million)

Census Year	Workers		Agricultural Workers		Agricultural Workers as % of Total Workers	Agricultural Labourers as Percentage	
	Total	Agricultural	Cultivators	Agricultural Labourers		of Total Workers	of Agricultural Workers
1951*	139.42	97.24	69.74	27.50	69.75	19.72	28.28
1961*	188.52	130.99	99.51	31.48	69.48	16.70	24.03
1971**	180.37	125.67	78.18	47.49	69.67	26.33	38.00
			RAJASTHAN			(Workers in Lakh)	
1961*	95.84	74.49	70.55	3.94	77.72	4.11	5.29
1971**	80.49	59.75	52.26	7.49	74.23	9.31	12.54

SOURCE : * A Compendium of Basic Statistics, 1968, Labour Bureau, Dept. of Labour & Employment, Govt. of India; Table 2.1, P-6.

** Pocket Book of Population Statistics; Census Centenary, 1972; Registrar General and Census Commissioner, India, N.Delhi. Table 7.

It seems obvious that in the years to come the percentage of agricultural labourers to total work-force or even to total agricultural workers is bound to expand; firstly, due to fixity of land and higher population pressure on it, and secondly, due to proletarianisation of small cultivators and village artisans owing to eviction and/or technological displacement.[1] As per projections of the Planning Commission, the work-force in agriculture is likely to boost up to 213.83 million by 1983, giving an addition of 21.4 million persons in 5 years, i.e. 1978-1983.[2] Based on 1971 proportion of agricultural labourers to total agricultural workers, this projection of the Planning Commission will generate about 8.13 million agricultural labourers.

So far these facts are related to those who reported wage-employment in agriculture as main economic activity. This forms primary source of labour supply for agriculture. In addition to these, marginal and small cultivators, workers engaged in household and non-house hold industries also hire-out their labour to supplement meagre incomes. This section forms secondary source of labour supply. As per 1971 census, persons reporting agricultural labour as secondary work were 18.24 lakh. Of this, 13.41 were females.

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1) Dantwala, M.L.; "Rural Employment: Facts and Issues." Presidential address to the XX Annual Conference of the Indian Society of Labour Economics held at Ahmedabad, Dec.1978. published in Indian Journal of Labour Economics, Vol.XXII, April-July 1979. pp.7

2) Govt. of India, Draft Five Year Plan, 1978-83, Table 4.11 Planning Commission, N.Delhi, 1978.

Thus on one hand, labour suppliers in agriculture are from various categories; on the other, employers of labour are only big and middle land cultivators. Small and marginal farmers hardly hire-in, instead they prefer to hire-out labour. All these facts make labour problem very grave and the work-force incidence borne by agriculture extremely high. Moreover, avenues of non-farm employment in villages are almost negligible. This also adds to its severity

1.1.2 Socio-Economic Back-ground of Agricultural Labourers

Social back-ground of agricultural labourers is also unfavourable. They are in the lowest rung of social heirarchy. Most of them belong to Scheduled Castes and Tribes and Weaker Sections of the society as shown in Table 1.2. Scheduled Caste and Scheduled Tribe agricultural labourers constitute between 42 to 44 percent of total agricultural labourers in India. Literacy rate among this population was only 13.58% as against 29.94% among all castes in India during 1971. Then, they possess no land or very small land for self employment. Economically they are hand to mouth.

Due to above cited unfavourable circumstances, agricultural labourers are subject to larger exploitation. Their exploitation is manifested in depressed wage rates. Further, scheduled caste agricultural labourers are paid the lowest wage rates. Their higher proportion depresses wage rates. This is supported

TABLE 1.2

Proportion of Scheduled Castes & Scheduled Tribes Workers to Total Workers in India & Rajasthan

1961 & 1971

Census Year	Total Scheduled Castes & Scheduled Tribes Workers	Agricultural Workers	Cultivators	Agricultural Labourers	S/C & S/T Workers as % of Total Workers in India/ Rajasthan	S/C & S/T Agricultural Workers as % of Total Agricultural Workers in India/ Rajasthan	S/C & S/T Cultivators as % of Total Cultivators in India/ Rajasthan	S/C & S/T Agricultural Labourers as % of Total Agricultural Labourers in India/ Rajasthan
				INDIA				(Workers in Million)
1961*	47.24	36.78	22.99	13.79	25.06	28.08	23.10	43.81
1971**	43.70	36.40	16.52	19.88	24.23	28.96	21.13	41.86
				RAJASTHAN				(Workers in Lakh)
1961*	30.00	24.35	22.06	2.30	31.30	32.69	31.27	58.38
1971**	23.72	19.57	15.53	4.04	29.47	32.75	29.27	53.94

SOURCE * Census of India 1961, Vol.I, Part V. A (1) (ii)

** Census of India 1971, Series I, Paper I of 1975.

by the coefficient of correlation worked out between wage rate in agriculture and proportion of Scheduled Caste and Tribes population to total population in Rajasthan. It turned out to be -0.2910 (significant at 5% level of confidence). Their wage rates, indebtedness, and the level of expenditure and incomes based on various studies conducted from time to time, are discussed below.

TABLE 1.3

Average Daily Earnings of Adult Male Agricultural Labourers

(In Rs.)

State/ India	1956-57	1964-65	Increase in 1964 - 65 over 1956-57	
			Absolute	Percentage
Rajasthan	0.98	1.76	0.78	79.6
India	0.96*	1.43	0.47	49

Source : Rural Labour Enquiry (1963-65), Final Report, 1975, Labour Bureau, Govt. of India, Simla.

* : India includes Jammu & Kashmir for 1956-57 only.

Though average daily earnings of adult male labour in agriculture registered an increase of 49% at national level (table 1.3) yet average debt per indebted house-hold increased from Rs.138.00 to Rs.243.87 during the corresponding period. Though the daily earnings of agricultural labourers in Rajasthan recorded the highest rise of 80%, the incidence of debt per indebted house-hold went up from Rs.352/- to Rs.584/-

during 1956-57 to 1964-65.[3] Most likely reasons seem to be rise in the cost of living, larger number of dependents to earners and decline in number of employment days etc.

TABLE 1.4

Change in Agricultural Wage Rates 1960-61/1969-70

(In Rupees)

State	Money Wages		Real wages in 1969-70 (at 1960-61 prices)	Change in Real Wages Over 60-61	
	1960-61	1969-70		Absolute	Percentage
Andhra Pradesh	1.46	2.46	1.40	-0.06	- 4.11
Assam	2.29	3.80	2.04	-0.25	-10.92
Bihar	1.30	2.70	1.34	+0.04	+ 3.08
Gujarat	1.97	2.94	1.73	-0.24	-12.18
Kerala	2.10	4.67	2.31	+0.21	+10.00
Madhya Pradesh	1.32	2.11	1.02	-0.30	-22.73
Mysore	1.67	2.35	1.34	-0.33	-19.76
Orissa	1.26	2.15	1.01	-0.25	-19.84
Punjab	2.81	6.34	3.24	+0.43	+15.30
Tamil Nadu	1.43	2.65	1.39	-0.04	-2.80
Uttar Pradesh	1.31	2.61	1.32	+0.01	+ 0.76

Source : Directorate of Economics and Statistics, Ministery of Agriculture and Irrigation, N.Delhi. Quoted from the Report of the National Commission on Agriculture, 1976, Vol.XV, p.243.

3. Rural Labour Enquiry (1963-65) Final Report, 1975, Labour Bureau, Govt. of India, Simla.

Table 1.4 shows that money wage rates have marked substantial rise in every state. But in real terms only two states, Kerala and the Punjab, registered increases, while seven states showed declines and were unable to maintain their 1960-61 levels.

Comparable data on income and consumption expenditure collected by three Agricultural/Rural Labour Enquiries are presented in Table 1.5

TABLE 1.5

Average Annual Income and Average Annual Consumption Expenditure of Agricultural Labour House-holds

(in Rupees).

Income/Expenditure	1950-51	1956-57	1963-64
Income	447	437.47	660.19
Expenditure	461	617.00	1029.00

Source : The Indian Year Book, 1970.

From table 1.5, we find that the average consumption expenditure exceeds income in all the years. Not only this, the gap between income and expenditure has increased over the period. Average size of the family of agricultural labour household in India remained virtually constant during 1956-57

(4.40 persons) and 1963-64 (4.47 persons). Like-wise, the average number of earners per household also remained 2.03 and 2.01 during 1956-57 and 1963-64. Thus these two factors are more or less neutral. Labour house-hold's economic position shows a deterioration.

Findings of the 25th Round of N.S.S. Reports (from July 1970 to June 1971) also indicate that average annual per capita expenditure of rural non-cultivating wage-earning house-hold was in excess of average annual per capita income in 5 out of nine states. Punjab records the highest income and expenditure.

Further, data pertaining to average daily earnings of small cultivating and non-cultivating rural labourers present a striking feature (Table 1.6). Average daily earnings of male non-cultivating agricultural labourers are found to be higher in 12 out of 14 states in comparison to small cultivating male workers. This is contrary to general belief that small cultivators are better off than non-cultivating labourers.

TABLE 1.6

Average Daily Earnings of Small Male Cultivating Worker & Non-cultivating Male Agricultural Labour (1970-71)

(Rs./day)

State	Small Cultivating Male Worker	Non-cultivating Male Agricultural Labourer
Andhra Pradesh	1.92	2.10
Assam	3.63	3.77
Bihar	2.23	2.25
Gujarat	1.95	2.33
Haryana	3.64	4.34
Karnataka	2.05	1.89
Kerala	3.40	4.10
Madhya Pradesh	1.69	1.64
Maharashtra	2.17	2.20
Orissa	1.76	1.83
Punjab	4.63	4.91
Rajasthan	2.66	2.97
Tamil Nadu	2.07	2.38
Uttar Pradesh	2.01	2.42

Source : 25th Round of N.S.S. Reports.

1.1.3 Wage-paid Workers in Rajasthan Agriculture

Agricultural workers occupy a prominent place in the

economy of Rajasthan. They constitute about 75 percent of total workers in the State as against 70% in India (Table 1.1). Though the proportion of agricultural labourers to total workers or to total agricultural workers was much lower than what it was at national level during both the census years, but, a significantly larger proportion of agricultural labourers in Rajasthan belong to Scheduled Castes and Tribes population who are subject to severe exploitation and discrimination. Proportion of Scheduled Castes and Scheduled Tribes agricultural labourers to total agricultural labourers in the State (53.94) was much higher than what it was at national level (41.86). Not only this, most of this population group are illiterate. Their literacy rate in the State was only 7.98% as against 13.58 percent in India. Thus, preponderance of Scheduled Castes and Scheduled Tribes agricultural labourers in the State and very low rate of literacy among them add to their exploitation, low level of productivity and low wage rates.

1.2 Issues in Agricultural Wages : A Survey of Literature

Systematic study of agricultural wage marked its start with the study conducted by G. Findlay Shirras[4] in 1924. During the early period the major focus was on the preparation of money and real wage indices. Based on these indices researchers tried

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4) Shirras, G.Findlay; Report on an Enquiry into Agricultural Wages in Bombay Presidency. Bombay Labour Office, Bombay, 1924.

to establish wage trends prevailing in different regions. They also focussed attention on the economic conditions of the labourers and the factors influencing wage level and wage fluctuations. In the post Independence period, not only researchers but the Government also took keen and active interest in wage and employment problems of agricultural labourers. The Government set up various Agricultural Labour Enquiries and Commissions. A permanent body, the National Sample Survey (N.S.S.) is entrusted with the collection of data on various aspects of rural poor and their wage and employment problems. During this period, village surveys and re-surveys were also conducted. Agro Economic Research Centres (A.E.R.C.) were set up in different parts of the nation.

During sixties, better to say after the inception of new production technology in agriculture, researchers' main attention was focussed on the impact of the Green Revolution on wages, employment and labour share in the increased agricultural production. We present below issue-wise brief account of related studies.

1.2.1 Factors Influencing Level of Wage Rate in Agriculture

Factors that may have influenced level of wage rate in agriculture may be socio-demographic and economic in nature.

V.N. Misra[5] constructed demand and supply functions. He postulated: (i) Agricultural wage depends on demand for and supply of labour, (ii) Demand for labour depends on percapita income, intensity of irrigation, cropping pattern and wage rate; (iii) Supply of labour depends on wage rate and alternative job opportunities.

He found that demand affecting factors explained 87% of the total variation in demand for hired labour; while supply factors had very limited influence. Demand and supply functions taken together explained only 29% of total variation in wage rates. He concluded that market mechanism was ineffective in determining wage rates. But the conclusion was seemed to be rather hasty to Vyas and Shivamaggi[6] in the light of the inherent limitations in the data used by the author.

K.K. Ghose[7] arrived at conclusions contrary to Misra. Ghose chose various demand and supply affecting factors like family size, income, cropping pattern, method of cultivation,

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5) Misra V.N., "Labour Market in Agriculture: A Study of Gujarat District." Indian Journal of Agricultural Economics, July-September 1970.

6) Vyas, V.S. and H.B.Shivamaggi, "Research on Agricultural Labour Markets" in A Survey of Research in Economics, Volume Four, Agriculture-Part II, a project sponsored by The Indian Council of Social Science Research, N.Delhi, 1975, P.211.

proportion of agricultural labourers to total agricultural population, female participation of depressed classes, nature of the contract, habit and tradition etc. He concluded where all the supply factors were present, they operated jointly to pull down wage, but where only some of them were present and others absent, the severe impact of the former was mitigated by the latter.

Herdt and Baker[8] opined that labour supply curve in agricultural labour market was perfectly elastic. As such, a moderate change in demand for labour affected only volume of employment rather than wage level. Had there been significant rise in demand for labour, as seen in Green Revolution belt, it would have positive effect on wage level. This implies that market mechanism is effective. But surplus labour force neutralises the effect of increased demand on wage rates.

Rath & Joshi[9] found labour market competitive and wage fluctuations, in their opinion, arose due to relative demand and supply conditions of labour.

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8) Herdt & Baker, "Agricultural Wages, Production and the H.Y.V." Economic & Political Weekly, March 25, 1972, PPA 23-27.

9) Rath & Joshi "Relative Movements of Agricultural Wage rates and General Prices : Some Indian Evidence" Artha Vijnana, June 1966, pp.115-32.

But it is almost impossible to measure demand for and supply of labour in agriculture; hence, most of the people try to select such factors which might have an influence on demand and supply forces.

Prof. Dantwala [10] tried to find out if there was any rationale in regional variations in wage and employment levels. Based on First Agricultural Labour Enquiry (1950-51) data, he selected some demand and supply affecting factors like net and double cropped area, irrigation, cropping pattern, percentage of rural population, percentage of agricultural labour families in rural population etc. But these factors did not yield satisfactory results. N.A. Majumdar[11] also did not get satisfactory results, in a similar attempt. Both were of the opinion that level of wage and employment depended on many other equally important factors not included for consideration. Therefore, a constellation of regional factors might explain the level of wage rate in a better way.

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10) Dantwala, M.L., "Regional Variations in Agricultural Employment and Wages" in Seminar on Rationale of Regional Variations in Agrarian Structure of India, held in 1956, Seminar Series-I, Indian Society of Agricultural Economics, Bombay-1, pp.98-103.

11) Majumdar, N.A., "Regional Variations in Agricultural Employment and Wages" in Seminar on Rationale of Regional Variations in Agrarian Structure of India, held in 1956, Seminar Series-I, Indian Society of Agricultural Economics, Bombay. pp.115-124.

In addition to general demand and supply factors, Mavinkurve[12] included yet another explanatory variable, i.e. the nature of employment (security of job) in his study. He found that higher the duration of job, lower was the wage rate. Suresh Chandra [13] tried to find out influence of urban growth, nearness from the industrial centre and 'labour unions' on wage level. All these three, as per his findings, affected agricultural wages in positive direction. M.N. Desai[14] included not only influence of urban and industrial growth, but also 'the nature of the operation', skill requirement and odd hour duties as explanatory variables. He found that operations requiring skill, more physical labour, and odd hour duties warranted relatively higher wages. G. C. Srivastava[15] arrived at conclusions similar to those of Desai and Suresh Chandra. But G.S.Gouri's[16] findings appear more

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12) Mavinkurve B.S., "Agricultural Wages and Systems of Payment in Bombay Karnataka." Indian Journal of Agricultural Economics, April, 1948.

13) Sureshchandra, "Agricultural Wages: Rates of Wages and Methods of Payments in Western Districts of U.P." Indian Journal of Agricultural Economics, April, 1948.

14) Desai, M.N., "Agricultural Wages & Systems of Payment" Indian Journal of Agricultural Economics, 1948.

15) G.C. Srivastava, "Influence of Urban Growth on Employment and Wages in Agriculture", Indian Journal of Agricultural Economics, Jan.-Mar.66, pp.84.

16) Gouri, G.S., "Impact of Urbanisation on Rural Economy" unpublished Ph.D. Thesis, Bombay Uni. 1952.

appealing and precise. In his opinion, it is not the nearness to urban centre but the accessability to it that affects wage and employment levels.

A.C. Gangwar[17] tried to examine relationship between wage rate and output per worker for wheat, Gram, Jowar and Rice. Wheat and Gram showed positive and significant association; while, rice exhibited negative influence on wage level. He opinied that there were other than producitivity factors affecting wage level in case of rice and Jowar.

Kalpana Bardhan[18] approached the subject in a different way. She postulated that in a very simplistic agricultural situation, relative positions of demand and supply factors decide the wage level; whereas in a complicated situation, various factors like cropping pattern, irrigation, proportion of rural households depending on agricultural employment, non-agricultural wage level prevailing in that area etc. influence the wage level. Indebtedness of rural work-force and seasonal migration depress the wage rates.

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17) Gangwar A.C., "Inter-regional Differences in Agricultural Labour use, Efficiency and Wages". Indian Journal of Agricultural Economics, July-Sept. 1970.

18) K. Bardhan, "Factors Affecting Wage Rate for Agricultural Labourers", Economic and Political Weekly, June 1973, PP.A56.

Another related aspect is mobility and wage level. L.G. Reynolds[19] found that inter-area movement of labour force appeared to perform not its traditional function of equalising wage rates, but quite a different function of equalising unemployment ratios in different areas. Charles A. Meyers[20] says, "Most of the mobility was job-oriented rather than wage-oriented". V.R. Joshi[21] in his study of 10 districts of Uttar Pradesh found migration and employment inversely related. But there are recent studies which suggest other-wise. Sheila Bhalla[22] found that heavy influx of labour force depressed wages in the Punjab. T.K. Jayraman[23] concluded that earning at the place of origin and migration were negatively associated; while, expected earning at the destination and migration were positively correlated. It means migration may affect wage level in other than labour surplus economics.

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19) Reynolds, L.G., "Wage Differences in Local Labour Markets", American Economic Review, June, 1964, P.375.

20) Myers, C.A: "Labour mobility in two communities" in Labour Mobility and Economic Opportunity- Essays; The Technology Press of M.I.T., 1954, P-75.

21) Joshi V.R., "Pattern of Rural Mobility" Indian Journal of Agricultural Economics, Oct - Dec. 1957

22) Bhalla, Sheila, "Real Wage Rates of Agricultural Labourers in Punjab, 1961-1977. A Preliminary Analysis", Economic and Political Weekly, June 30, 1979. Review of Agriculture.

23) Jayraman T.K., "Seasonal Migration of Tribal Labour: An "Irrigations Project in Gujarat", Economic & Political Weekly 13 Oct., 1979, pp.1727.

1.2.2 Trends in the Pattern of Movements of Money and Real Agricultural Wage Rates and Prices

Earlier studies measuring wage rate movements and trends therein, have resorted to the construction of money wage and real wage indices. Based on the fluctuations in the indices, trends in wage rate movements were established. Comparison between the wage movements of different regions were also examined. Analysis of causes for decline or rise in wage rates over period among various states were also made. Such studies have been conducted by K.K.Ghose[24] and K.L.Datta.[25]

V.N.Kothari[26] and B.B.Patel[27] have examined wage trends over period through quartile and rank correlation techniques. Kothari found decling trend at State level, while at district level, it was not only decling but convergent and purvasive. Patel also found declining trend in real wages for the State of Gujarat during 66-67/67-68 over 56-57/57-58.

Indira Hirway[28] employed straight line equation to measure growth rates in money and real wages for Gujarat State.

24) Ghose, K.K., Op.cit.,
25) Datta, K.L., "Report on Causes of Rise in Prices in India".
26) Kothari, V.N., "Movements of Wage rates in India", Bombay University, 1976.
27) Patel B.B., Ph.D. Thesis, The Maharaja Sayajirao University, Baroda.
28) Indira Hirway "Trends in Agricultural Wages in Gujarat", Indian Journal of Agricultural Economics, July-Sept. 1973.

She found a rising trend, but rate of rise was very low. A very recent study, covering the period from 1961 to 1977, has been done by Sheila Bhalla[29] for the Punjab State. As per her findings, long run trend was rising in all the operations, but year to year trend was erratic. She also examined convergence or divergence of real wage rates (using standard deviation) among the districts over the period. Except harvesting, all operations showed convergence.

A study by Rath and Joshi[30] for Bombay Presidency, revealed that fluctuations in wages were similar to those of cereal prices but not as sharp and frequent. Wages were found to be more stable than prices. Wages always lagged behind prices. Sridhar Misra [31] conducted a field survey of five regions in Uttar Pradesh. He observed that in all the areas wages lagged behind cost of living. Lag element was marginal in hill tracts, while it was substantial in Eastern plain and Bundelkhand regions.

Mavinkurve[32] constructed wage and price indices and concluded that lag element in agricultural wages was much more

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29) Sheila Bhalla, Op.Cit.

30) Rath, Nila Kantha and R.V. Joshi, Op.Cit.

31) Misra Sridhar, "Agricultural Wages in relation to Rural cost of Living", Indian Journal of Economics, Vol.29, Part-I, July, 1948, pp.75-80.

32) Mavinkurve, B.S., Op.Cit.

than in industrial wages. Suresh Chandra[33] prepared wage and food grains price indices and found food grains indices to be higher than those of wages. He also concluded that there existed a lag in agricultural wages.

K.L. Datta constructed real wage indices with base 1891=100 by deflating money wage with price index numbers. Real wage index increased to 158 in 1911. In his opinion, labourers were better off at national level. At regional level, indices were not identical.

A study conducted by K.K.Ghose is more comprehensive and covers longer period from (i) 1891 to 1911, and (ii) 1916 to 1946. Results of the first period are similar to those of Datta. In the second period, rise in money wage indices was larger than real wage indices. Labourers were hardly better off in terms of real wages. To know real wage gains, he employed another method known as "cumulative net gains or losses" year after year. He took real wage index as the unit of measuring the standard of living. Gains or losses were carried over to the subsequent years and added to compare standard of living with the base year. As per his analysis, labourers could not improve their standard of living, but were worse off in cumulative sense.[34]

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33) Sureshchandra, Op.Cit.

34) Ghose, K.K. Op.cit. Chapter-7, pp.188 to 190.

A systematic effort to investigate into the living conditions of agricultural labourers started with the setting up of First Agricultural Labour Enquiry, 1950-51 (IALE) and Second Agricultural Labour Enquiry, 1956-57 (II ALE). Though these enquiries were comprehensive, but data were not strictly comparable due to conceptual and procedural changes. Wages for agricultural labourers were lower in 1956-57 than those in 1950-51.

N. Krishnaji[35] studied Real Wages for 1964-65 over 1950-51 and 1956-57. Consumers Price Index Number for Agricultural Labourers, issued by Labour Bureau, Simla, was used as deflator. As per his findings, real wages increased only in Kerala and Orissa in 64-65 over 1950-51. In 1964-65 over 1956-57 only three States showed increase in real wages. Green revolution could not improve real wages in the Punjab due to heavy import of labourers.

Indira Hirway[36] who studied Gujarat State from 1960-61 to 1965-66, found an improvement in real wages, though the rises in real wages were very low and varied from district to district.

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35) Krishnaji, N., "Wages of Agricultural Labourers", Economic and Political Weekly, Sept.25, 1971, pp.148.

36) Hirway, Indira, Op.Cit.

R.N.Soni[37] studied real and money wages for the Punjab during 1965-69. He found rising trend in both the indices but rate of rise in money wages was higher than real wages. James W.Gough in his study[38] of the Punjab and Haryana, found real wages rising. This rise, he attributed to agricultural production due to the adoption of H.Y.V. seeds. He sub-grouped the whole period into 56-57 to 64-65 and 65-66 to 69-70. The latter division was made specially to examine the impacts of the green revolution on wages since its inception. During the I period no sizeable improvement existed. But in the II period, there was a considerable and relatively higher rise within a short period of 5 years.

Herdt and Baker[39] also noticed increase in real wages in the Punjab, Kerala and Tamil Nadu. They concluded, "in those areas in which H.Y.V., specially wheat, had been widely adopted, both money and real wages of agricultural labourers were higher than in regions where H.Y.V. was not adopted."

A.V. Jose[40] concluded (for the period 56-57 to 71-72) that real wages increased not only in the Punjab, Kerala and Tamil Nadu, but in Uttar Pradesh and Gujarat also.

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38) Gough, J.W., "Agricultural Wages in the Punjab & Haryana, A Note." Economic and Political Weekly, March 27, 1971, pp.A19-20.

39) Herdt and Baker, Op.Cit.

40) Jose, A.V. "Trends in Real Wage Rates of Agricultural Labourers", Economic & Political Weekly, March 74, pp.A-25.

C. Muthiah[41] also attributed rise in real wages to H.Y.V. and short duration seeds. In his opinion, not only real wages of agricultural labourers increased, but their bargaining power also became stronger in Kerala.

Thus, the studies discussed above have attributed increases in real wages to New Production Technology in agriculture, and firmly concluded that wages have risen. But there are other studies also which have not shown any substantial rise in real wages of labourers due to the Green Revolution.

Pranab Bardhan[42] studied the Punjab and Kerala for the period 1959-60 to 1968-69. He deflated simple average money wages by Consumers Retail Price Index Number for Agricultural Labourers issued by the Labour Bureau, Simla. He noticed real wages in the Punjab and Heryana falling between 56-57 to 64-65 and 60-61 to 67-68 also. Considering operation-wise wages, only reaping and harvesting wages showed improvement. But in Kerala real wages increased between 1960-61 and 1967-68. But from this one should not infer that

41) Muthiah, C., "Agricultural Labour Problem in Thanjavur and the New Agricultural Strategy", Indian Journal of Agricultural Economics, July-Sept.70, pp.15-23.

42) Bardhan, Pranab, "Green Revolution and Agricultural Labourers" , Economic and Political Weekly July 1970, Special No. pp.1239-46.

Green Revolution had adverse effect on wages, because even in the Punjab, the Green Revolution during the period of this study was in its primary stage covering only 22% of the gross cropped area. In addition to this, one objection was also raised by Visaria,[43] regarding the use of simple average in arriving at daily wage rate from the wages for various operations. To give equal weights to all operations is misleading.

Rohini Nayyar[44] who studied wage rates in Uttar Pradesh for the period 59-60 to 73-74, observed that money wages increased by 6.5% per annum as against 1.2% rise in real wages. There appeared to be no correlation between H.Y.V. technology and real wage rates. Moreover, real wages declined steadily after 70-71 in Western Uttar Pradesh - a highly progressive region. Similarly Chhattopadhaya[45] expressed that Green Revolution did not significantly raise wages in real terms.

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43) Visaria, P. "Survey of Research on Employment", Indian Council of Social Sciences Research, 1971 (mimeographed).

44) Nayyar Rohini, "Wages of Agricultural Labourers in Uttar Pradesh, A Note", Economic & Political Weekly, 6 Nov., 1976.

45) Chattopadhaya Manbendu, "Wage Rates of two Groups of Agricultural Labourers", Economic & Political Weekly, March 26, 1977. pp.A20 to A22.

1.2.3 Relative Share of Agricultural Labourers in the increased agricultural production due to The Green Revolution

Though money wage, real wage and employment opportunities to agricultural labourers in rural India may have increased; but the more important question bearing social and welfare implications is: has the labour in agriculture shared proportionately with the other factors of production in the increased agricultural production per hectare?

C.H. Hanumantha Rao[46] studied the districts covered under Intensive Agricultural District Programme (IADP). Data on productivity for 1967-68 were compared with those of 62-63. He found that the production of all food grains increased at a higher rate than the increase in real wage rates during the period. Similarly he found that the share of the labour in the value of output/acre for Local Variety of rice in Kharif and Rabi seasons in West Godawari District remained 20.3% over the period; whereas for the High Yielding Variety i.e. I.R-8 variety, share was 19.4% & 12.8% in Kharif and Rabi seasons respectively. Thus the relative share of labour declined.

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46) Hanumantha Rao, C.H., "Green Revolution and the Labourer's share in output," Agricultural Situation in India, Aug. 1971, pp.283-85.

R.N. Soni[47] conducted a field survey in the Punjab for 1967-68 and 68-69 for irrigated wheat production in irrigated regions. He found that the share of labour in the cultivation of Wheat/acre was 33.4% and 32.8% in 67-68 and 68-69 respectively. Here also the share had a declining trend.

But S.S.Acharya's[48] findings are quite different. He conducted a study of two districts of Rajasthan, viz. Udaipur and Chittorgarh. He examined and compared relative share of labour in the benefits of new technology for the year 1971-72. His findings revealed that share of the hired labour in the gross output was 11% on H.Y.V. farms as against 6% on non-H.Y.V. farms. Absolute as well as relative share of labour was higher on H.Y.V. farms at the existing degree of mechanisation. Of the total benefits of new agricultural technology, 23.1% accrued to the hired labour.

Evidence provided by Harpal Singh and R.P.Sinha[49] based on the data taken from Economics of Farm Management Studies conducted during 1954-57 and 1966-69 indicated that

47) Soni, R.N., Op.Cit. P.27.

48) Acharya S.S., "Prospects for Agricultural Labour in the context of New Agricultural Technology in Rajasthan" in Rural Labour in India, Edited by S.M.Pandya, Shri Ram Centre, N.Delhi, 1976.

49) Harpal Singh & R.P.Sinha, "Growth of Farm output and Employment. Some Micro Evidence", in Rural Labour in India edited by S.M.Pandya, Shri Ram Centre, N.Delhi, 1976.

over the period output growth was higher than labour employment growth. The share of labour in the total cost as well as in the total output had considerably declined.

1.2.4 Extent and Nature of Wage Differentials in Agriculture

The issue of wage differentials in agriculture is relatively of recent origin. Few people have paid attention towards this. The major questions in this respect are: how can we explain wage variations over regions, seasons and operations? What is the nature and extent of such wage differentials in agriculture?

Sethuraman[50] tried to capture the extent of seasonal wage variations based on operations within a year at the State and the national level. He used N.S.S. data. He found substantial wage variations between operations. Wages tended to fall by 25% from peak to slack seasons. Wages for harvesting and transplanting were found to be higher than those for weeding. He observed that seasonal variations occurred on demand side mainly due to monsoon which affected agricultural activities and consequently demand for labour and their wage rates.

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50) Sethuraman S.V. "Seasonal Variation in Unemployment and Wage Rate" - Indications for Rural Works Programme", Economic and Political Weekly, 10 June, 1972.

Herdt and Baker[51] using A.W.I. data, examined the pattern of Seasonal variations in agricultural wages. To measure seasonal pattern, authors prepared seasonal indices for male field labour for nine regions. They did not discover seasonal variations of a significant degree. Seasonal pattern was complex and weak.

A.J. Fonseca[52] employed variance analysis to study the seasonal fluctuations and found these to be significant at 1 percent level of confidence.

V.N.Kothari[53] examined inter-district wage differentials in agriculture for adult male casual labour for the period 1950-51 to 1965-66. He noticed that wage differentials tended to converge over the period. Causes which explanied convergent trend were higher rate of population growth followed by lower rate of agricultural production in high-wage districts and vice versa.

A.C. Gangwar[54] found high degree of wage differentials among various crops and within a crop among States. Wages were found to be higher in Rabi than Kharif Crops. R.N. Soni[55]

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51) Herdt and Baker, Op.Cit.

52) Fonseca, A.J., Wage Issues in Developing Economy, the Indian Experience, O.U.P., Bombay-75 Chapt.III.

53) Kothari, V.N., Op.Cit.

54) Gangwar, A.C., Op.Cit.

55) Soni, R.N., Op.Cit.

observed operation-wise wage differentials to be widening over period. The basic cause, he mentioned, was degree of substitution between labour and machine. Higher the degree of substitution, lower the increase in wage of an operation. Harvesting wages recorded the highest rise. Giri and Rao[56] examined inter-regional, inter-seasonal and inter-operation wage variations in Madhya Pradesh. They constructed month-wise and crop-zone-wise wage indices and found seasonal factor to be most important in causing wide variations. Wages were found to be the highest during harvesting. Wheat zone observed the highest wages while rice zone the lowest.

N.Krishnaji[57] while studying wage trends, measured inter-State wage differentials also. In his opinion, wage differentials were convergent overtime.

B.B.Patel[58] measured geographical wage differentials through coefficient of variation in the districts of Gujarat. Wage differentials shrank during 50-51 and 67-68. He fitted a regression model and found that net area irrigated, factory employment, man-land ratio, ratio of female labour to male and area under cash crops explained 67% of total inter-district wage variations.

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56) Giri, R., and M.P. Rao., "Index Numbers of Agricultural Wages in Madhya Pradesh", Agricultural Situation in India, Aug.1961, pp.469-474.

57) Krishnaji, N. Op.Cit.

58) Patel, B.B., Op.Cit.

Shiela Bhalla[59] examined operation-wise wage differentials among the districts of the Punjab. She found that the wage differential contracted for other than harvesting in 1977 over 1961. Farm-output alone explained 25 to 43% of total variations in real wage rates of various operations at State level. With another regression equation, she concluded that productivity per male agricultural labour explanined about 50% of inter-district wage variations in real wages during seventies. In her view, wage differentials, at district level, were due to rising productivity and supply of labour, both working in opposite directions.

1.3 Objectives and the Scope of the Present Study

Since very little work has been done on agricultural wages in Rajasthan, the present study is an attempt in this direction.

1.3.1 Objectives of the Study : This study aims at the examination of the trends in the movements of money, real and operation-wise wage rates in agriculture. Relationship between the movements of agricultural wages and cereal prices has also been examined.

The study measures the extent and the nature of spatial, temporal and operation-wise wage differentials in agriculture at village and regional levels. The influence of irrigation on seasonal wage fluctuations in agriculture has also been examined.

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59) Bhalla Shiela, Op.Cit.

Next, we have tried to test the validity of the following hypothesis: There exists a perfectly elastic labour supply curve in agriculture. Therefore, a moderate increase in demand for labour affects only the level of employment rather than the level of wages. In this context, trends in agricultural production have been examined and related with trends in the movements of real-wages.

Finally, we have explored some of the significant socio-demographic and economic factors that influence the level of wage rates in agriculture and cause wage differentials between villages/regions.

1.3.2 Scope of the Study : Agriculture, in itself, is a vast subject covering activities ranging from crop-cultivation to plantation, fishery, forestry, animal husbandry, dairy farming etc. Inclusion of all such heterogeneous branches in a study will not only be a deviation from the main objective; but also not feasible due to a host of problems varying in nature and magnitude. We confine our study only to the wages of adult male casual labour employed in crop-raising activities. Almost the same degree of skill is needed for performing various farming operations. Thus the "Labour Unit" under study is relatively more homogeneous.

We have included six major agricultural operations carried out during the processes of tillage to harvesting.

These are (i) Ploughing (ii) Sowing (iii) Weeding (iv) Irrigation and allied activities (v) Reaping and Harvesting, and (vi) Trans-planting. Operations left beyond the purview of our study are load-carrying, well-digging, med-bunding etc. These are relatively less significant and are not directly related to crop-raising activities only.

Irrigation and allied activities include three sub-operations:

i) Preparation of water courses (drainage) in the field.

ii) Lifting of water from the well through animal or machine power; and,

iii) Looking after the water courses while irrigating the fields and diverting water flow from one corner to another in the field.

Like-wise, reaping and harvesting also represents three sub-operations:

i) Reaping the crop and tying into bundles;

ii) Thrashing of dried reaped crops through animal or machine power; and,

iii) Winnowing and sacking of grains.

The wage-data are collected (by the Government) separately for each of these sub-operations, but are finally published as an average over an operation. The State Government

of Rajasthan started collecting data on agricultural wage rates regularly on monthly basis from January 1968. Hence, the data from January 1968 to June 1968, i.e. average of six months wage rates represent wage rate for the whole of the agricultural year 1967-68. For rest of the years afterwards, wage data from July to June next year, i.e. for the agricultural year are available. A period of 12 years from 1967-68 to 1978-79 is covered in this study.

1.4 Data Base of the Study

1.4.1 Wage rate data : Monthly wage rate data for adult male casual labour in agriculture have been compiled from the unpublished records of the office of the Directorate of Economics and Statistics Rajasthan, Jaipur. Wage data sent by this office to the Directorate of Economics and Statistics, Ministry of Food and Agriculture, New Delhi, are published in the latter's annual publication "Agricultural Wages in India" (A.W.I.).

In the publication of A.W.I., there is always, in general, a time-lag of a minimum of five to six years. Hence, we collected the data from the original sources. Therefore, we deem proper to append these data by operation, month and village (centre) for the period 1967-68 to 1978-79 (See Appendix Tables).

As far as the method of collecting the data by the primary agency is concerned, no information is available relating to certain questions such as: how are the wage reporting centres (villages) selected? How and from whom are these wage data collected, etc.? Only a reference "villages are so selected as to represent the wages and general agricultural conditions of the district" is available in A.W.I. [60] Therefore, researchers and investigators have genuine apprehensions about the reliability of these data. K. Bardhan has remarked " The data (A.W.I.) are subject to all kinds of investigator bias, locational bias and respondent bias".[61]

Data from N.S.S. records and Farm Management studies (F.M.S.) are superior but are irregular and based on changing concepts and procedures. Long, regular and continued series of wage data like ours cannot be gathered from N.S.S. and F.M.S. On the other hand, A.W.I. data are monthly, regular and are based on unchanged concepts and procedures. Furthermore, wage reporting centres are also kept unchanged to a larger extent. Perhaps, owing to above favourable and basic characteristics, researchers[62] have utilised A.W.I. data

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60) "Agricultural Wages in India", 1964-65, pp.555.

61) Bardhan K. "Rural Employment, Wages and Labour Market in India." Economic & Political Weekly, Review of Agriculture, June-77, pp.1071.

62) i) Gough, J.W., Op.Cit. iv) Krishnaji, N., Op.Cit.
ii) Jose, A.V., Op.Cit. v) Kothari, V.N., Op.Cit.
iii) Bardhan, K. Op.cit. vi) Fonseca, A.J., Op.Cit.
vii) Herdt & Baker, Op.Cit.

quite extensively in their studies. National Commission on Agriculture[63] has also found these wage data suitable for broad temporal and cross-sectional comparisons. Dr. V.M. Rao has very aptly concluded, "Despite some systematic errors, the A.W.I. may still be found to be of use in research investigations, particularly in those involving qualitative hypotheses about the behaviour of agricultural wages, cross-sectionally or over time.[64] However, the results and conclusions based on these should be judged subject to such limitations.

1.4.2 Other Data : As in this study we have used a number of other variables either as explanatory variables or simply as correlative variables, the nature and scope and source of such other data are described below:

Population data pertaining to each village under study have been gathered from respective District Census Hand Books, 1961 and 1971 for Rajasthan.

The data on area, acreage, irrigation, and cropping pattern for the year 1970-71 have been compiled from District Census Hand Books. For the years other than 1970-71, data have been obtained from unpublished revenue records like,

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63) Report of the National Commission on Agriculture 1976, Part XV Agrarian Reforms, pp-242.

64) Rao, V.M., "Agricultural Wages in India - A Reliability Analysis", Indian Journal of Agricultural Economics, July-Sept.1972, PP.55.

'Jinse war' and 'Milan Khasra' of the respective Revenue Offices (Tehsils). These records are prepared by village Patwaris of respective villages. Such data at district level have been gathered either from "Basic Statistics" or "Statistical Abstract -Rajasthan" published by the Directorate of Economics and Statistics Rajasthan, Jaipur. Informations not published so far for some of the years are noted down from the office records of the Directorate.

Consumer's Price Index Number for Agricultural Labourers in Rajasthan (A.C.P.I.) is issued by the Labour Bureau, Government of India, Simla, at state level only. These are collected from Statistical Abstract of India or Reserve Bank of India's monthly bulletins. A.C.P.I. is used as a common deflator for all the villages to get real wage rates. Data pertaining to general amenities like road, power, communitation system and distance from the nearest town etc. have been collected from the District Census Hand Books 1961 and 1971.

1.4.3 The Universe and the Villages under study

Rajasthan stands second in area among the states of India. Its area is 342000 sq.km., that is, 10.40% of the country's total area. It lies between 23°.3' and 30°.12' North latitudes and 69°.3' and 78°.17' East longitudes. The State

was comprised of 35900 villages as on 31st March 1975. It is divided into 26 administrative units called districts.

Rajasthan occupied 10th rank with 4.70 percent of India's total population in 1971. Its population was 25,765,806 in 1971. Density of population in 1971 was 75 per sq.k.m. as against 178 (excluding J. & K.) of the country as a whole. Rajasthan is a State of diversified climates, topography and soils. The density of population in the State varies from 4 persons per sq.k.m. in Jaisalmer to 184 in the populous and fertile plains of Bharatpur. It has vast dry sand tracts with no vegetation for miles in the North-Western part and fertile plains and plateaus in South-Eastern part. The Aravalli-Ranges intersect it into two parts running from North-East end to South-West. Rainfall has its peculiar erratic and uneven behaviour ranging from mere 20 cms. per annum in Jaisalmer to 105 cms. per annum in Jhalawar.

Village is the basic geographical unit of analysis in this study. Villages covered in this study are the same as chosen by the State Government of Rajasthan for collecting monthly rural wage quotations. Two villages from each of the twentysix districts excepting Bikaner and Jaisalmer have been selected in the State. The districts of Bikaner

and Jaisalmer are represented only by one village each. Thus, the data are available for 50 villages in all. However, for the purposes of our study, we had to leave out two of these villages, one each in Ganganagar and Barmer districts because of non-availability of comparable data. As such 48 villages are covered in this study. Though village is the basic geographical unit of analysis, yet due to non-availability of certain data at village level, district and/or regional analysis have also been attempted at certain stages highlighting some of the aspects of greater importance.

A map of "Rajasthan" State with district boundaries is attached showing spatial dispersion of 48 villages. Villages are located with numbers allotted to each as shown against their names in the map.

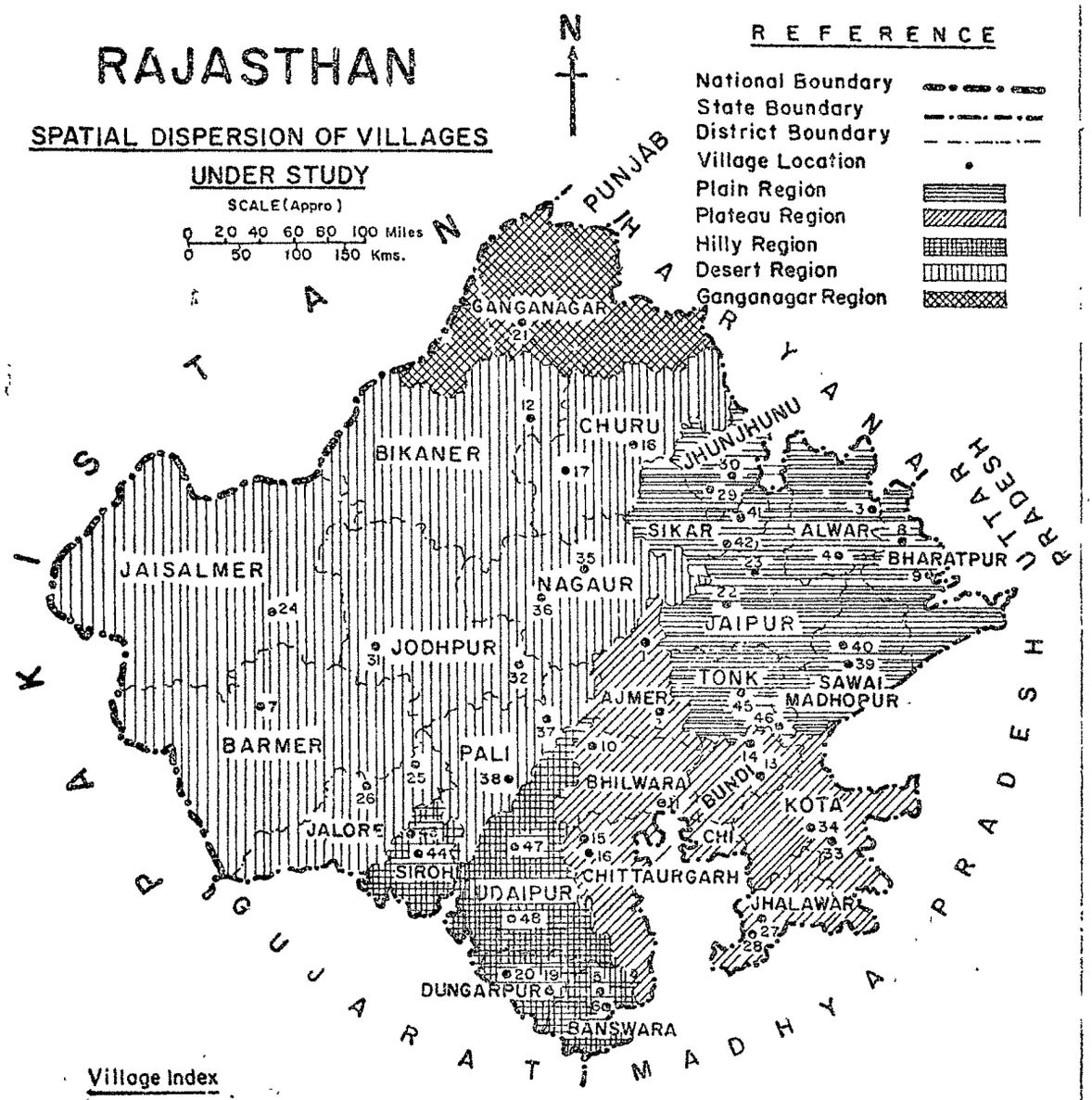
1.5 Definitions and Computation of Wage Rate

The following terms and definitions have been used in this study.

Agricultural Worker : It includes both cultivator and agricultural labourer.

Agricultural Labour: It refers to a person whose principal source of income is wage paid work on other's farm though he may have his own tiny piece of land.

MAP-1



Village Index

1 Dadiya	11 Bigod	21 Baropal	31 Sekhla	41 Nathusar (Sikar)
2 Khayra	12 Nathusar (Bika.)	22 Ninder	32 Chokrikhurd	42 Mehroli
3 Salarpur	13 Kuwarti	23 Chitanukhurd	33 Dhoti	43 Manora
4 Kasba-machri	14 Sukhpura	24 Bhaisra	34 Bamla	44 Palri
5 Kakenseja	15 Pahoona	25 Panwa	35 Jayal	45 Sohla
6 Anjana	16 Adana	26 Sayla	36 Tausar	46 Amli
7 Bissala	17 Bigga	27 Govindpur	37 Deepawas	47 Sera
8 Jagheena	18 Jesrasar	28 Bani	38 Dayalana Kalan	48 Peepli 'A'
9 Khanwa	19 Karada	29 Doomra	39 Meenapara	
10 Asind	20 Jhonthri	30 Khinwasar	40 Gurali	

Agricultural Year : It refers to twelve months starting from July to June next year. In agrarian sense, from Kharif Crop to Rabi Crop forms an agricultural year.

Agricultural Wage Rate : It is the amount in rupee terms paid to adult male casual labourer for doing agricultural work per day including cash equivalents of perks such as meals, tea, bidi, (Indian cigarette) etc. Wage paid in kind fully or partially is imputed into equivalent money value and added up in money wage by the wage reporting agency itself.

1.5.2 Wage Rate Computation : Village - a wage reporting centre - is a geographical unit of analysis. Hence, the first step is to compute daily wage rate for a village. Wage reporting agency collects operation-wise wage data every month. Since data on employment days for these operations are not available, a simple averaging of wage rates of all the six operations under study, gives us average monthly daily wage rate for that particular month and village. Further, averaging of these monthly wage rates for all the 12 months provides average annual daily wage rate for that year and village.

To arrive at the average monthly wage rate for a district we have to take an average of month to month wage

rates for all the villages within a district. Further averaging over the 12 months of the district average wage rates, gives the average annual daily wage rate for the district. Averaging over all the 48 villages gives the average wage rate for the state.

Similarly, operation-wise wage rates are also calculated. A simple average of 12 months wage rates for a particular operation of a village gives average annual daily wage rate for that operation and the village. A further averaging of operation-wise wage rates for all the centres within the state gives us average annual wage rate for that operation at state level.

1.6 Scheme of the Study

The second chapter probes into the pattern of movements over-time in money, real and operation-wise wages in agriculture; and sees how far agricultural wage rates are sensitive to cerealprice fluctuations and how much time do wages take to adjust with price variations.

Nature and the extent of spatial, temporal and operation-wise wage differentials are dealt with in Chapter III. It investigates into the probable impacts that the irrigation potential would have yielded on wage differentials. It

further explores into the possibility if a pronounced pattern of seasonal wage cycle in agriculture can be established.

The fourth Chapter is devoted to examine relative movements of real wages and productivity in agriculture, and tries to test the wide spread feeling that wage rates in agriculture had tended to remain constant over the past decade.

The influence of some of the important socio-demographic, and economic parameters on the determination of the level of agricultural wage rate has been examined in the fifth Chapter.

Major findings and the results derived in earlier Chapters are summarised in Chapter sixth.

Basic wage data by operations and months compiled from the office records of the Directorate of Economics and Statistics Rajasthan, Jaipur, for the period 1967-68 to 1978-79 are presented in an Appendix at the end of the Thesis.