CHAPTER III

EXTENT AND NATURE OF WAGE DIFFERENTIALS IN AGRICULTURE

The general wage level is not a reality but a statistical fiction. It conceals wide variations in wage rates of different occupations in an industry, or of the same occupation among different industries, villages and geographical regions in a state/nation. The study of relative wage rates by these categories is commonly termed as 'The Problem of Wage Structure or Wage Differentials'.[1] Wage structure in its totality consists of various types of wage differentials.

The issue of wage differential bears profound economic and social welfare significance[2], particularly for developing economies.[3]

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1. Reynolds, L.G., "Labour Economics & Labour Relations" Prentice Hall of India, 1978. P.8.
2. I.L.O., International Labour Conference, Thirtyfirst, session San Francisco, 1948; Wages (a) General Report, Sixth term on the Agenda, P.82.
3. Turner, H.A., "Wage Trends, Wage policies and Collective bargaining: The Problem of Under-developed Countries". Cambridge Uni. Press, 1965, PP.61.

Significant and persistent geographical wage differentials in agriculture have been observed and studied in the United States.[4] Findings of two Labour Enquiries in India (1950-51 and 1956-57) are indicative of the existence of sizable wage differentials in agriculture among the States. The ratio of the highest wage State (Assam = Rs.1.90) to the lowest wage State (Orissa = Rs.0.72) was 2.70 in 1950-51. It declined to 2.60 in 1956-57.[5] But detailed explanation of wage differentials and examination of related aspects are almost negligible in both the enquiries. Few leading scholars[6] also looked into the problem of regional wage differentials in agriculture.

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4. i) Welfson, R.J., "An Econometric Investigation of Regional Differentials in American Agricultural Wages", Econometrica, April, 1958, pp.225.

   ii) Ducoff, L.J., "Wages of Agricultural Labourers in the United States", U.S.Deptt. of Agricultural Technical Bulletin No.895, Washington, July, 1945.

   iii) Black J.D., "Agricultural Wage Relationships: Geographical Differentials", Review of Economics and Statistics, Vol.18, 1936, PP.67-83.

5. Report of All India Second Agricultural Labour Enquiry, Govt. of India, 1956-57, PP.115-117.

6. i) Dantwala, M.L., Op.cit.

   ii) Majumdar, N.A., Op.Cit.

In recent years, a few studies [7] have been conducted on agricultural wage differentials. Even now, this issue for the State of Rajasthan, remains almost untouched in Government as well as in academic spheres.

Major questions on this issue are :

(i) What is the extent and nature of spatcial, temporal and operation-wise wage differentials in agriculture?

(ii) What factors explain wage differentials most?

(iii) Whether wage differentials in agriculture are based on variations in factor productivity or on variations in the composition of labour force or on both and to what extent?

This chapter takes into the examination of the first question in detail. Remaining two questions are dealt with in Chapter V.

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7. i) Sethuraman, S.V., Op.Cit.

ii) Herdt and Baker, Op.cit.

iii) Fonseca A.J., Op.cit.

iv) Bardhan, Kalpana, Op.Cit. June, 1977, Review of Agriculture.

v) Giri and Rao, Op.cit.

vi) Soni R.N., Op.cit.

vii) Rath and Joshi, Op.cit.

viii) Bhalla, Sheila, Op.cit.

ix) Krishnaji N., Op.cit.

x) Kothari, V.N., Op.cit.

xi) Patel B.B., Op.cit.

Section I deals with the introduction and hypotheses. Section II measures the extent and the nature of geographical wage differentials in agriculture (i) between villages at State level; and (ii) between villages at regional levels. Seasonal wage fluctuations are examined, measured and their significance level tested in Section III. Operation-wise wage variations are discussed, analysed and their degree of significance is tested in Section IV. Major findings are summarised in the last Section.

3.1 HYPOTHESES

General observations and studies[8] suggest that geographical wage differentials are larger among unskilled and common labourers than their skilled counter-parts in an industry even for the same work. Likewise, wage differentials are expected to be of lesser degree and following a regular pattern in organised sector due to Unionisation and Collective bargaining mechanism; while, it is not so in unorganised sectors.[9] In the long-run, wage differentials should have a tendency towards compression, not only in industries, but in agriculture also. Evident reasons are

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8. i) Reynolds L.G., Op.Cit., Chapter 9, pp.193-202.

   ii) Lester, R.A., "Economics of Labour", The Mcmillan and Company, New York, 2nd Ed., 1964, Chap.10, pp.314.

9. Lester, R.A., Ibid.

elimination of distance and geographical barriers due to expansion in transportation and communication facilities, and increasing labour mobility over time. Rapid growth of off-farm sector also makes labour movements possible. But agriculture is almost an unorganised sector and utilises services mostly of the unskilled labourers. One may reasonably expect higher and unsystematic wage differentials in agriculture which are also inconsistent with the economic rationale of demand and supply and of seasonal forces. A mild narrowing tendency may also be expected over time. Further, one may expect low wage differentials where irrigation is evenly distributed; and high wage differentials, where it is unevenly distributed. It implies that as the distribution of irrigation potential tends towards equity over the years, wage differentials should have a tendency towards contraction.

3.2 SPATIAL WAGE DIFFERENTIALS IN AGRICULTURE

3.2.1 The existence, extent and the trend in geographical wage differentials over period have been measured firstly, through the ratio of the highest wage village to the lowest wage village; and secondly, through the coefficient of variation (C.V.). The former measures the extent of wage variation between the two extreme limits. It does not take into account the wage variations of all the villages.

To eliminate this limitation and to have an impact of wage rates of all the villages on wage differentials, second technique - the C.V. - is employed.

TABLE 3.1

Extent and Nature of Agricultural Wage Differential between the villages of Diversifying Geographical Characteristics in Rajasthan : 1967-68 to 1978-79.

Year / Technique	1967-68	68-69	69-70	70-71	71-72	72-73
Ratio	3.91	3.37	2.71	2.75	3.60	3.74
C.V.	30.60	25.35	26.27	25.46	29.05	30.15

Year / Technique	1973-74	74-75	75-76	76-77	77-78	78-79
Ratio	4.07	4.17	3.85	2.87	2.95	3.06
C.V.	29.84	33.81	33.03	27.87	25.39	28.63

Source : Table 2.1

Note : Ratio = Ratio between the highest and the lowest wage-rate.

C.V. = Coefficient of Variation.

Table 3.1 reveals that the ratio of the highest wage village to the lowest wage village shows frequent ups and downs. Year after year movements in the ratio centre around 3 to 4. Coefficients of variations in wages move around 30%. In no year, C.V. falls below 25%.

Since a pronounced trend can not be established in spatial wage differentials by merely looking at table 3.1, annual rate of change is worked-out by fitting Straight line Equations to the series of Wage ratio and C.V. to ascertain statistical precision in the pattern of spatial wage differential over the entire period. Linear Equation for the wage ratio is negatively sloped at the rate of -0.0156293 annually. This suggests that wage differentials between the highest and the lowest wage villages have a mildly declining tendency. But wage differentials in terms of C.V. increased a bit, since its straight line equation is positively sloped at the rate of +0.1458391 annually. Interpreting the two trends together, we can say that there is no marked tendency for wage differentials to decline over the years under study. Table 3.2, showing Ranking Structure of villages in ascending order of their wage rates from 67-68 to 78-79, also reveals that villages were frequently changing their ranks and that too sharply. Only one village-Baropal-has kept its rank unchanged.

TABLE 3.2

Ranking Structure of Villages in Ascending Order of their Wage Rates in Agriculture: 1967-68 to 1978-79

Year / Village	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
1.Asind	1	16	13	12	8	1	4	43	39	40	4	4
2.Kakenseja	2	1	8	8	3	12	8	10	-	-	-	-
3.Karada	3	4	22	10	11	6	1	1	2	18	31	27
4.Jhonthri	3	5	24	15	13	15	36	35	13	6	4	4
5.Jesrasar	3	9	36	39	35	17	39	30	10	6	20	19
6.Bigod	6	14	23	16	15	9	6	3	5	6	3	15
7.Anjana	7	3	11	7	43	42	40	34	25	24	4	4
8.Peepli'A'	8	6	10	24	17	30	19	18	12	6	4	15
9.Adana	9	17	9	4	3	9	14	15	37	37	39	35
10.Bhaisra	9	-	-	47	-	-	21	29	28	30	37	4

Year / Village	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
11. Manora	9	7	15	9	6	23	25	18	3	1	2	12
12. Khayra	12	18	14	13	22	13	15	20	23	32	30	25
13. Ninder	13	32	44	42	45	44	45	38	33	39	38	37
14. Sohla	14	9	20	19	27	30	2	14	13	6	15	14
15. Sera	15	12	6	21	23	24	29	39	31	6	4	13
16. Meenapara	15	18	5	3	13	7	10	9	9	36	36	34
17. Dadiya	17	11	2	2	6	4	3	2	22	20	19	20
18. Bani	18	15	4	1	2	3	7	4	1	2	21	2
19. Palri	19	10	17	14	12	18	28	28	20	6	4	4
20. Chitanu-Khurd	20	12	18	22	33	34	31	23	7	6	40	23
21. Dayalana-Kalan	21	30	38	43	18	45	25	37	27	17	17	11
22. Govindpura	22	28	28	25	20	18	12	7	8	5	18	3
23. Deepawas	22	17	6	6	9	7	33	-	-	-	-	-
24. Nathoosar (Sikar)	24	37	29	30	23	18	11	5	25	16	4	28
25. Salarpur	25	23	27	35	41	33	9	24	-	-	-	-

Year / Village	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
26.Pahoona	26	22	25	18	19	14	21	31	34	3	4	4
27.Seyla	27	34	19	20	39	32	17	41	30	21	22	33
28.K.Machri	28	25	34	23	36	43	34	33	21	31	4	17
29.Bissala	28	45	30	44	31	26	44	44	41	6	4	40
30.Sukhapura	28	21	21	16	15	11	18	21	-	-	-	-
31.Gurali	28	25	40	26	34	27	37	25	11	4	23	18
32.Mehroli	28	37	33	32	38	31	27	15	13	19	33	38
33.Amli	28	2	12	4	10	5	4	8	6	22	26	30
34.Panwa	34	35	1	11	1	1	12	6	4	6	4	4
35.Kuwarti	35	30	32	29	23	22	-	-	-	-	-	-
36.Dhoti	36	24	26	28	20	25	20	26	19	28	16	21
37.Nathoosar (Bikaner)	37	33	42	30	3	38	24	27	17	35	35	22
38.Sekhla	37	29	3	37	27	46	46	45	13	29	28	26

Year / Village	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
39.Chokri Khurd	37	39	16	26	29	16	41	15	24	23	29	36
40.Jayal	37	40	35	38	31	18	16	11	17	26	25	31
41.Banla	41	27	30	34	37	37	32	12	29	27	27	24
42.Khinwasar	42	43	45	40	42	40	38	32	-	-	-	-
43.Bigga	43	41	43	45	44	35	35	40	35	34	1	1
44.Doomra	44	44	41	41	40	36	30	21	-	-	-	-
45.Tausar	44	42	36	36	30	29	21	13	38	38	32	32
46.Khanwa	46	36	38	32	23	28	43	42	36	33	34	39
47.Baropal	47	47	47	48	47	47	47	46	40	41	41	41
48.Jagheena	48	46	46	46	46	41	42	36	32	25	24	29

Source : Table 2.1

3.2.2 Measurement of the Extent of and Trends in Wage Differentials in Agriculture between the Villages of Similar Geographical Conditions in a Region

To start with we have divided the whole State of Rajasthan into five regions* namely, the plain, the desert, the hilly, the plateau and Ganganagar composed of 14, 13, 8, 12 and one village respectively. Region-wise coefficients of variation, (C.V.) are presented in table 3.3. Coefficient of variation, in desert and plateau regions are high and also are subject to higher year to year fluctuations. Variations are low in the hilly region.

From the perusal of the irrigation potentials (gross irrigated area as percentage of gross sown area) of the regions given in table 3.3, one finds that the desert region had the lowest percentage of irrigated area on one hand, and, on the other hand, it had the highest wage differentials. But the plateau region, does not show the lowest wage differentials, although it has the highest irrigation potential. If we examine the distributive aspect of the irrigation potential among the villages it might help to explain the variations better. Graph 3.I presents Lorenz Curves showing the extent of inequality in the distribution of gross-irrigated area among the constituents of each of the regions. Larger the area in between the Lorenz Curve and the line of equal distribution, larger the extent of inequality in the distribution

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* Detailed procedure about the formation of regions with village names is presented in Chapter II.

TABLE 3.3

Trends and Extent of Wage Differentials in Agriculture
Between the Villages of Similar Geographical Conditions in a Region: 1967-68 to 78-79

Regions / Years		1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Plain	C.V.	31.00 (14)	22.62 (14)	23.11 (14)	21.23 (14)	19.09 (14)	20.77 (14)	24.19 (14)	19.34 (14)	18.04 (11)	22.00 (11)	21.11 (11)	21.92 (11)
	I.P.	-	-	-	20.29 (14)	-	21.19 (9)	17.35 (10)	21.53 (11)	21.30 (9)	23.20 (9)	23.28 (10)	22.64 (10)
Hilly	C.V.	16.39 (8)	11.62 (8)	9.55 (8)	12.24 (8)	22.69 (8)	21.75 (8)	20.40 (8)	23.47 (8)	17.09 (7)	9.20 (7)	13.98 (7)	13.03 (7)
	I.P.	-	-	20.25 (5)	20.11 (8)	-	-	-	20.64 (8)	-	-	19.56 (6)	23.75 (7)
Desert	C.V.	18.33 (13)	15.67 (12)	24.32 (12)	21.75 (13)	22.31 (12)	24.68 (12)	20.83 (13)	34.87 (12)	33.17 (12)	20.82 (12)	21.18 (12)	25.94 (12)
	I.P.	-	-	-	6.49 (13)	5.23 (11)	8.18 (10)	7.13 (10)	11.16 (8)	4.58 (10)	5.17 (11)	6.80 (11)	6.96 (11)
Plateau	C.V.	21.03 (12)	9.02 (12)	17.03 (12)	16.26 (12)	16.85 (12)	18.66 (12)	14.51 (11)	29.31 (11)	35.68 (10)	29.81 (10)	20.68 (10)	18.67 (10)
	I.P.	-	-	-	40.28 (12)	27.03 (11)	34.46 (9)	24.21 (9)	33.34 (8)	37.39 (8)	47.49 (7)	34.33 (10)	31.08 (10)

I.P. = Irrigation Potential

Source :Wage data contained in table 2.1 and village names for each region as per 2.4.1

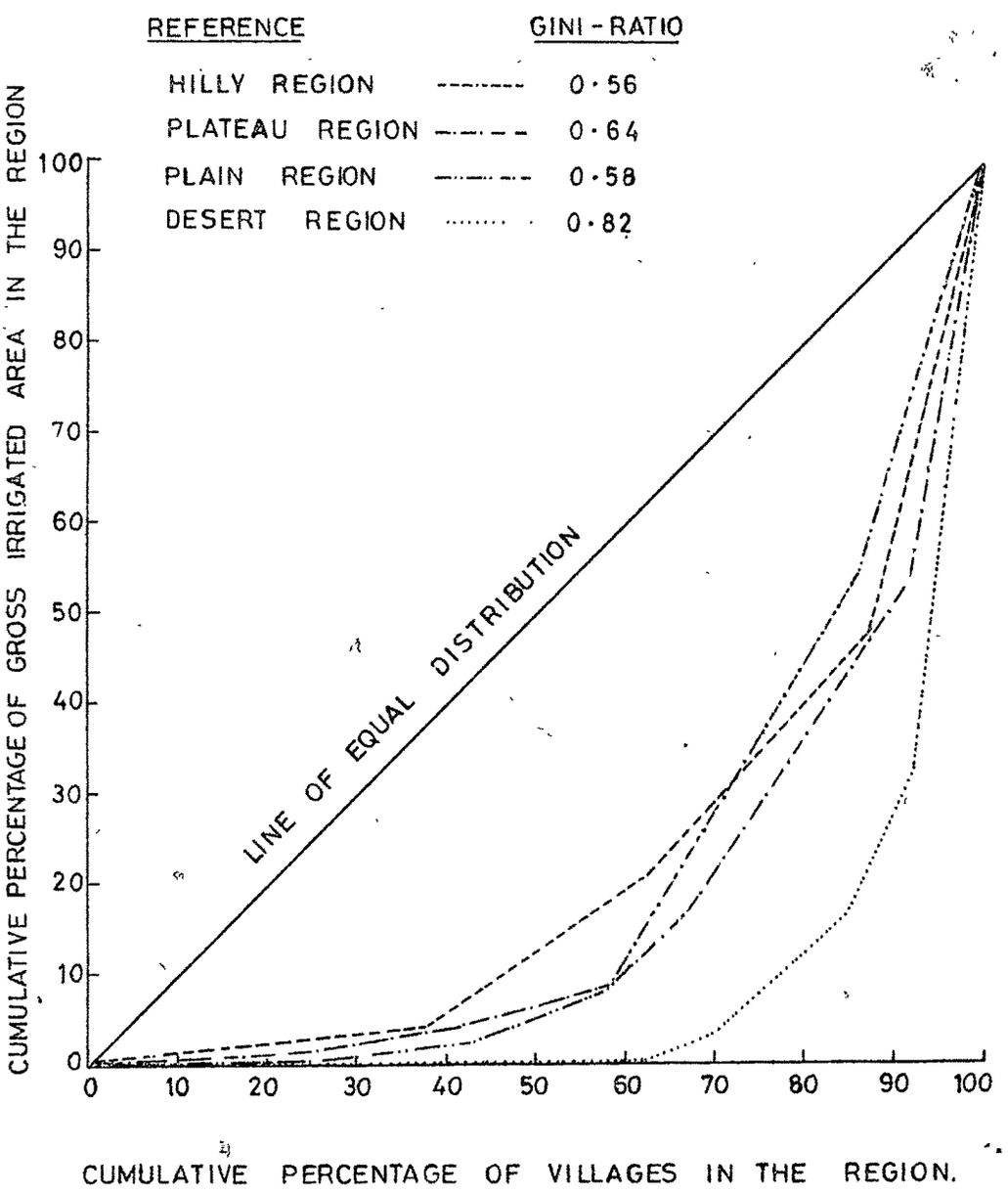
Note :(1) Figures in parentheses refer to number of observations (villages) based on which C.V. or irrigation potential has been worked out.
(2) Since observations did not remain the same while calculating irrigation potential for different years, as such figures relating to irrigation potential should be taken only as indicative of a general level of irrigation potential prevailing in a region.
(3) Since there is only one village in Ganganagar Region, wage differentials (C.V.) cannot be worked out.
(4) Irrigation Potential denotes gross irrigated area as percentage of gross-sown area.

GRAPH III · 1

LORENZ CURVE SHOWING DISTRIBUTION OF IRRIGATION - POTENTIAL AMONG VILLAGES OF REGIONS IN 1970 - 71

AND

GINI - RATIO



of irrigation facilities. The Lorenz curve of the desert region has the largest area implying that the highest degree of inequality prevails in the distribution of irrigated area among its villages. Lorenz Curve of the plateau region shows larger area than the hilly and the plain regions and thereby larger extent of inequality in the distribution of irrigated area among its villages. Since the plateau region has the larger inequality in the distribution, it has larger wage differentials also than the hilly and the plain regions despite the highest irrigation potentials.

Since graph shows an approximation rather than statistical precision, we have worked out Gini's Concentration Ratio (G.R.) to measure the precise extent of inequality in the irrigation distribution among the villages of each of the regions. Higher the ratio, higher the concentration and higher would be the inequality in the distribution. G.R. is the highest for the desert region (0.82) and the lowest for the hilly region (0.56). Variations are also found to be in the same order. Further, G.R. is larger for the plateau region (0.64) than the hilly and the plain regions (0.56 and 0.58 respectively). Wage differentials are also found to be larger in the former than in the later despite the highest degree of irrigation potentials. Thus it appears that inequality in the distribution of irrigation potential may be an important factor causing inequality of wage over the villages.

3.3 SEASONAL WAGE DIFFERENTIALS

Economic rationale of demand for and supply of labour does suggest that there should be an increase in wage rates during peak seasons and a fall during slack seasons. Therefore, one may hypothesize that wages are bound to fluctuate between peak and slack seasons only if labour supply curve is upward sloping rather than horizontal. Absence of such fluctuations in wage rates during busy and off seasons indicates about the existence of excess labour force and/or non-absorption of labour force by the prevailing wage rate. One may expect variations in wages during different seasons to the extent the labour supply curve is upward sloping.

But seasonal fluctuations may not exist significantly in a highly advanced village/region with respect to the adoption of improved agricultural practices, like H.Y.V. seeds, fertilizers, multiple cropping, availability of assured water supply round the year and so on. Since all these practices increase the demand for labour and spread it round the whole year cancelling out larger gaps between peak and slack season durations and the intensity of work as well.

Therefore, questions that arise for examination are:
(i) What had been the size and nature of wage fluctuations between various villages within a month and between various

months within a village? (ii) How far seasonal wage variations are being influenced by irrigation viz. comparison of seasonal variations between irrigated and non-irrigated regions? (iii) How far seasonal wage fluctuations are statistically significant?

3.3.1 Examination of Seasonal Wage Fluctuations

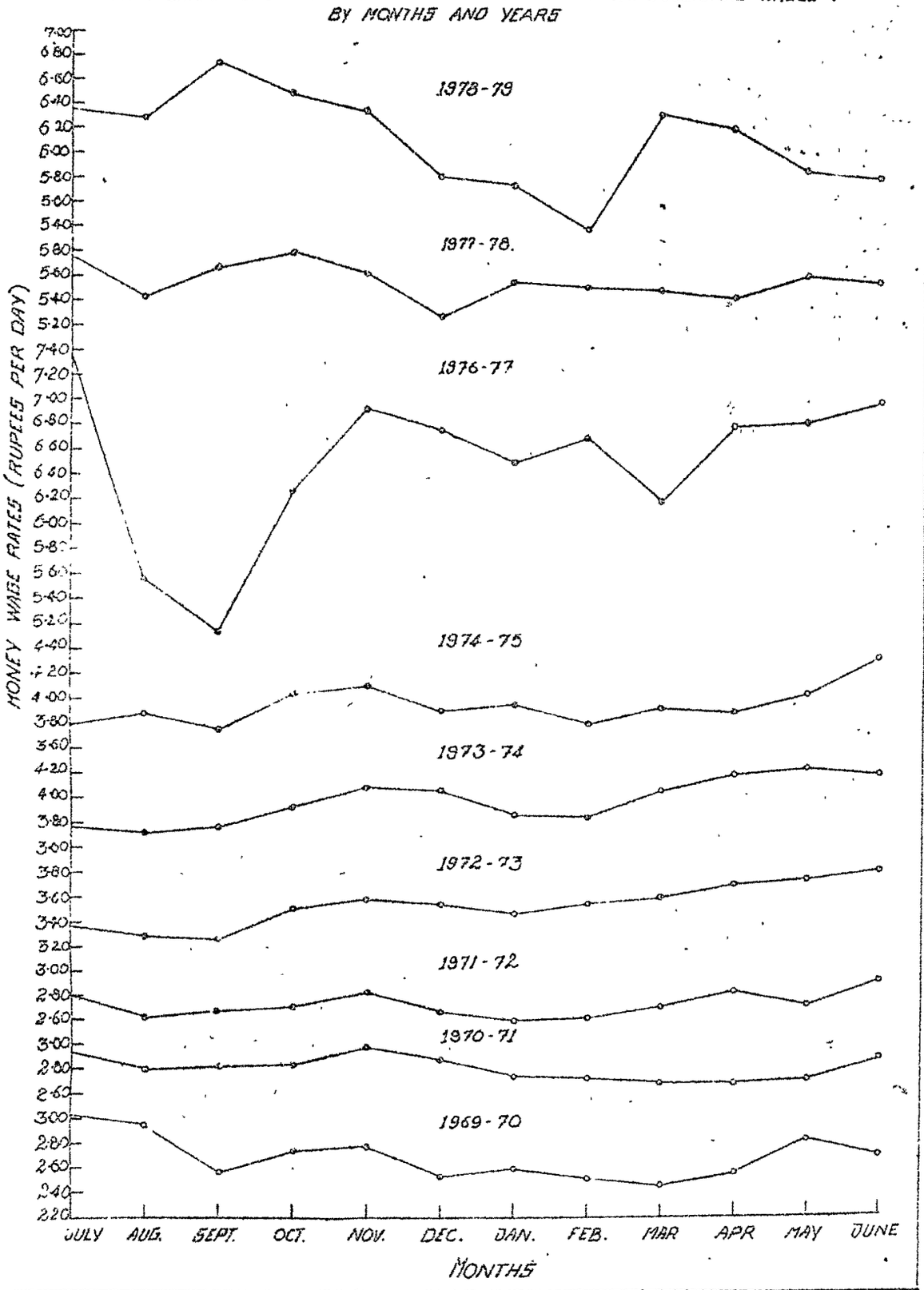
Month-wise wage rates are worked out based on Appendix Tables by taking simple averages of wage rates of only those villages having twelve months wage data in the year. Monthly average wages are presented in graphical form for the examination of seasonal pattern. Graph III-2 is an indicative of mild and identical intensities in monthly fluctuations upto 1974-75.

During late seventies fluctuations are severe and vary in intensities. Graph III-2 presents absolute rather than percentage wage fluctuations. During earlier seventies, money wages were just one-half of the late seventies. Obviously, absolute fluctuations would be of mild degree during early seventies comparing to those of late seventies.

Number of observations included for analysis were larger in earlier years than in the later years. Large number of observations would have cancelled out larger wage variations. To see if it happened so, we have categorised all the villages into three groups:

GRAPH III-2

TIER CHART SHOWING SEASONAL FLUCTUATIONS IN AGRICULTURAL WAGES : BY MONTHS AND YEARS



(i) Villages with less than one percent (<1%) gross irrigated area;

(ii) Villages with more than one percent but less than 25 percent (1%<25%) gross irrigated area;

(iii) Villages with more than 25 percent (>25%) gross irrigated area.

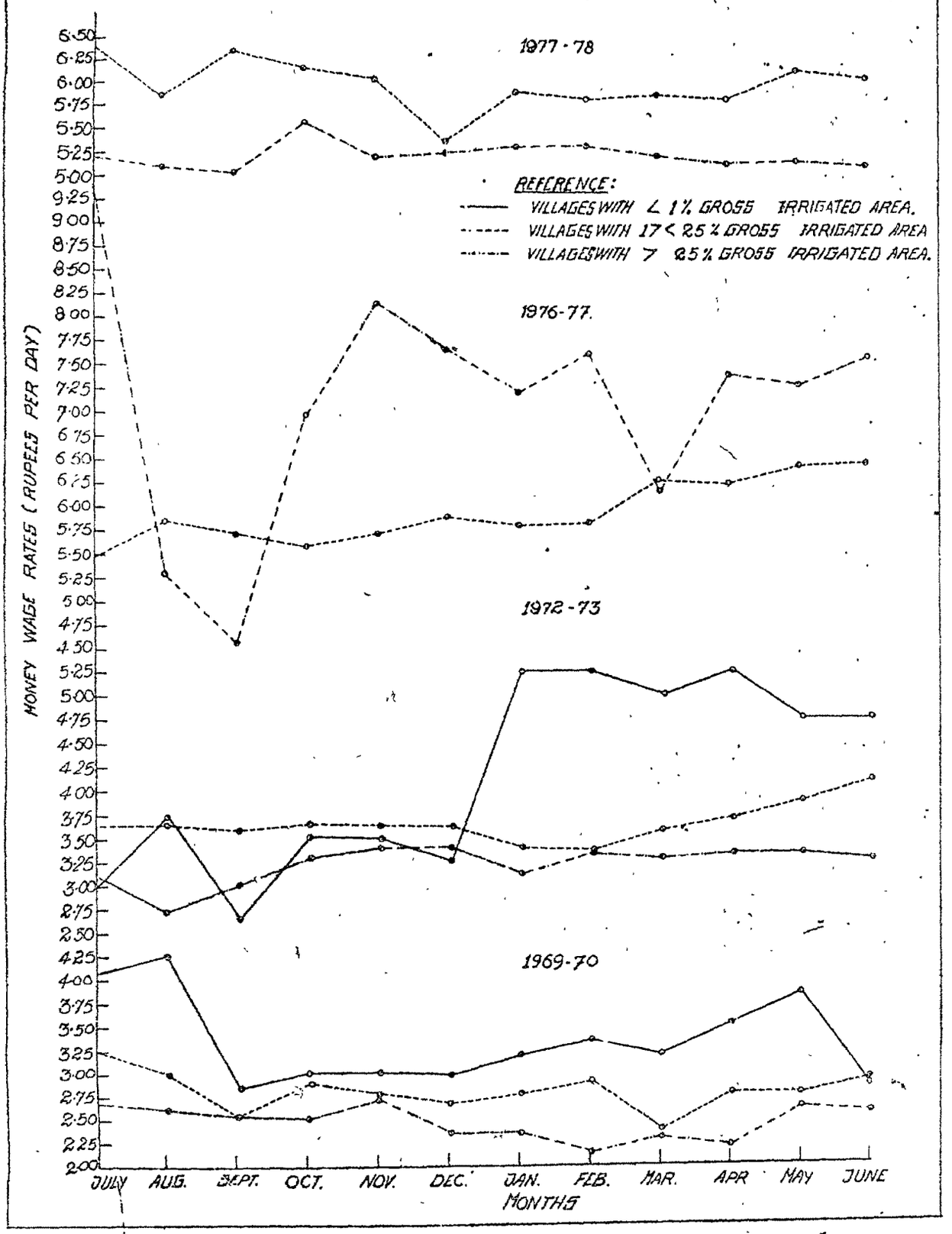
Irrigation based classification of villages will reduce their numbers on one hand; on the other hand, it will focus upon the influence of irrigation in determining temporal wage fluctuations. This exercise has been carried out for the years 69-70, 72-73, 76-77 and 78-79 only. For each of the categories of villages, simple monthly average wages are worked out. Graph III-3 presents resultant diagrams. Graphs for the years 69-70 and 72-73 have undergone complete change in new situations as compared to their old positions depicted in Graph III-2. Now monthly wage variations for these two years appear to be larger and significant in comparison to those of 1977-78.

Pattern of Seasonal Wage Fluctuations Over Period

Graphs are now looked at from different angle i.e. how far month to month wage fluctuations remained identical in all the years. Whether there existed any significant deviation in the pattern of seasonal fluctuations over the years? Graphs for the years 1969-70 to 1974-75 show, in general, an identical pattern of seasonal movements over the period (See Graph III-2).

GRAPH III·3

TIER CHART SHOWING SEASONAL FLUCTUATIONS IN AGRICULTURAL WAGES: BY MONTHS AND GROSS IRRIGATED AREA.



Not only pattern but intensity of fluctuations is also similar. Wages seem to be on peak during the ploughing, sowing and harvesting seasons. Because on one hand, these operations, specially ploughing, warrant higher wages owing to high requirements of physical labour; on the othe hand, demand for harvesting is concentrated over a short period and can not be postponed even for a few days. Wage rates remained very high in July and moved down-ward during August-September. Wages again picked up in October and reached their height in November due to harvesting of Kharif crops and post-harvesting preparatory work followed by ploughing-sowing for rabi crops. From December onward, a falling trend is witnessed till February when irrigation and weeding take place. March exhibits recovery. Wages touched the peak during April and May, the months of rabi harvesting.

To have a more clear picture of month to month fluctuations and to find out if there existed any phenomenal cyclical movements in wage rates, monthly wage indices are constructed assuming lowest wage month index equal to 100 for every year. The resultant table 3.4 reveals a cyclical pattern of wage movements in an agricultural year. Wages started declining in August, and continued till September in Kharif season, again a down-ward tendency is witnessed from December continuing till February. June also exhibited a mild falling trend to some extent.

TABLE 3.4

Monthly Wage Indices*: 1969-70 to 1978-79

(Lowest Wage Month Index = 100 for each year)

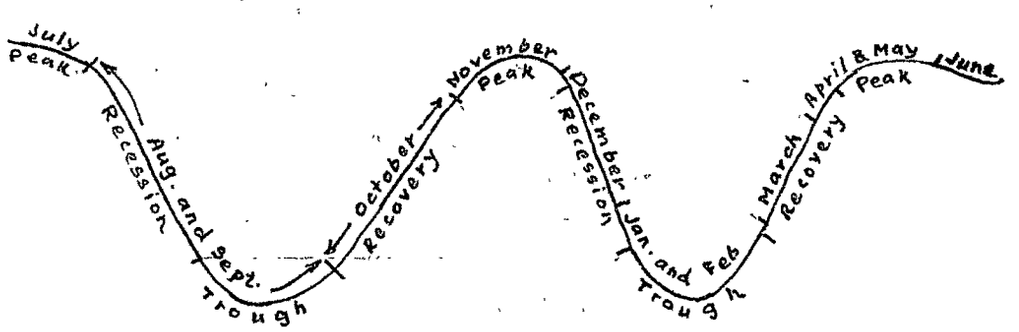
Year \ Month	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
69-70	124.18	120.90	104.92	111.89	113.52	103.28	106.15	102.87	100.00	104.10	115.18	109.84
70-71	108.92	104.46	104.83	105.20	111.15	107.06	101.86	101.47	100.00	100.00	100.74	107.06
71-72	107.31	101.15	103.08	104.23	109.23	102.69	100.00	100.77	104.23	109.23	104.23	112.69
72-73	102.75	100.61	100.00	107.34	109.48	108.26	106.12	106.26	109.79	113.15	114.37	116.51
73-74	101.07	100.00	101.07	105.36	109.65	108.85	103.49	103.22	109.12	112.33	113.67	112.69
74-75	101.06	103.19	100.00	107.45	109.31	103.72	105.32	101.06	104.79	103.46	107.45	114.89
75-76**	-	-	-	-	-	-	-	-	-	-	-	-
76-77	144.05	108.33	100.00	122.03	135.09	131.77	126.71	130.80	120.86	132.75	133.53	136.75
77-78	109.49	103.23	107.59	109.87	106.64	100.00	105.50	104.74	104.55	103.42	106.83	105.69
78-79	118.00	116.51	125.05	120.04	117.44	107.61	106.68	100.00	117.44	115.21	109.09	108.16

Source : Appendix Tables.

Note : * Villages having all the twelve months data in a year are included and monthly average wage for the state as a whole is worked out based on such villages.

** Since villages having wage data for all the twelve months were only three, wage indices are not prepared.

A recovery or an upward wage cycle is visible from October, and touching peak in November due to Kharif harvesting. During Rabi season, upswing starts from March; and touches its height in May-June. July also showed an upward movement due to ploughing and sowing at mass-scale. A possible wage cycle or cycle of wage movements emerging out of the table 3.4 is drawn below:



Two severe troughs with two major peaks seem to be inevitable in an agricultural year. Peaks and troughs are, by and large, occurring during the same months every year. Several peaks and troughs are not witnessed within a year and with different timings also as Herdt and Baker[10] have found in their study. A pronounced rather than a complex pattern of seasonal wage fluctuations (cycles) is evidently visible. Our findings are dissimilar to those of Herdt and Beaker[11] in this regard.

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10. Herdt and Baker, "Agricultural Wages, Productivity and H.Y.V." Economic and Political Weekly, 25 March, 1972, pp.A 23-30.

11. Ibid.

Classification of months based on Wage Cycle in Agriculture

Based on the above wage cycle, all the months of a year can very well be classified in a tabular shape as under:

	WAGE CYCLE			
	Recovery	Peak	Recession	Trough
Months	October	November	August	September
	March	April	December	January
	-	May	-	February
	-	June July	-	-

Classification of months based on the Level of Wage Rate in Agriculture

Months of a year can further be divided according to the wage levels.

	Level of Agricultural Wage Rate		
	Low	Middle	High
Months	September	August	July
	January	October	November
	February	December	April
	-	March	May
	-	-	June

Above classification of months does indicate that a month in a falling wage cycle does not necessarily mean a month of low/lowest wage rate. For example : December falls in a downward phase of the cycle, even then it never remained a month of the lowest wage index excepting 1977-78 (see table 3.4). It was rather a month of moderate wage index. Wage rate recedes from peak towards trough in December, but does not reach trough. On one hand, September, January and February appear to be the months of slack seasons for agricultural activities, and consequently low wage months in general; On the other hand, August, October, December and March are the months of moderate activities and moderate wages as well. July, November, April, May and June emerge as the months of peak wages. Variations from two to four weeks, either way, seem to take place depending upon the arrival of monsoon, use of seed varieties (local long duration or hybrid and improved short duration), cropping pattern, available irrigation facilities etc.

During the years 1977-78 and 1978-79 also, the pattern remained almost identical. Peaks and troughs occurred during the same months with slight deviations. It seems the duration of slack season was reduced from August-September to only August in 1977-78. It would have been possible perhaps, due to better irrigation and use of short duration seeds which complete a crop-cycle in 120 days instead of 160 days. But the picture in 1978-79 is a bit complex, though

basically the same. Lowest wage was found again in February. Wages were high in March due to early rabi harvesting. Early harvesting would have taken place due to the use of improved short duration seeds of wheat and other crops. Early harvesting makes possible a third crop of six to eight weeks duration after April which is known as 'Jaid'. Even then, no phenomenal change in seasonal movements is reflected over the period except that rabi harvesting touched peak wages in March-April rather than in April-May. Since the deviation in the pronounced pattern of seasonal wage fluctuations is witnessed only in 1978-79, a strong and definite conclusion about the shift in the seasonal pattern would be unwarranted. It may take place only in highly irrigated zones, where three crops in a year have, now, become a general phenomenon. Such situation hardly prevails all over the Rajasthan excepting in a few areas.

Graph III-3 drawn on irrigation based classification of villages in each year, brings out certain very significant facts about the seasonal fluctuations in wages. Lesser the intensity of irrigation, higher the intensity of fluctuations in wages and vice-versa. Villages pertaining to less than one percent irrigated area, exhibited the highest month to month wage fluctuations in 1969-70 and 1972-73; while those of the highest irrigated area witnessed rather mild and even negligible wage fluctuations in some of the months. The

impact of irrigation on wage fluctuations is evident and significant too. The implication is that irrigation determined the intensity of seasonal fluctuations. It further implies that irrigation and seasonal variations in agricultural wages would have remained inversely correlated. Since irrigation spreads agricultural activities round the year; consequently, the duration between the peak and the slack seasons shrinks and the volume of demand for labour varies a little only in both the seasons.

Another point worth comment is that wages were found lower in highly irrigated villages. This implies wage rate and irrigation were inversely associated. Why has this paradoxical situation arisen? The first reason perhaps, lies in the fact that lower the duration of work, higher would be the wage rate and vice-versa. Since volume and duration of work, both, are found higher in highly irrigated pockets, labourers agree to work at lower wage rates with the hope of getting employment for larger number of days. Therefore, labourers would fetch higher per capita annual income rather than per day income in highly irrigated villages.

Secondly, low land-man ratio would have been another responsible factor for low wage rates in highly irrigated zones. Most of the villages with very high land-man ratio are unirrigated; while, those of low land-man ratio are highly irrigated. Land-man ratio has shown very strong and decisive influence on daily wage rates (see chapter V).

Third cause seems to be the mechanisation in agriculture. Higher degree of mechanization would have pushed wage rates down-ward. Higher productivity of land due to higher assured irrigation causes phenomenal savings to cultivators and thereby substantial investment for mechanisation. Ploughing and harvesting, the two major operations, requiring higher degree of physical toil and thereby high wage rates, are preferred to be carried out now by machines. The degree of substitution for these operations is quite high. In changed circumstances, the demand for casual labour arises mostly for weeding and transplanting operations. This shift would have adversely affected wage rates. The fourth reason seems to be the shift in the demand for labour from casual to attached labourers. Attached labourers are preferred due to increased and round the year agricultural activities. This has also adversely affected demand for casual labour and consequently wage rates.

The third point which the Graph-III.3 menifests is that the pattern of seasonal fluctuations was by and large, identical in all the categories of villages though the degree of variation differred. It means irrigation affected intensity rather than the general pattern of seasonal wage movements. In the least irrigated villages, wages were found to be higher during August. The underlying reason seems to be the late ploughing and sowing which generally get started only on the arrival of monsoons. Consequently, this would have pushed Kharif harvesting from November-December to January-February. Moreover, use of deshi varieties (local, long duration and rain-fed varities) of Jowar, Bajra rather than improved varieties also caused a shift in the seasonal pattern of wage

fluctuations in low irrigated zones as compared to highly irrigated zones. Further, the results based on averaging wage data for 2 to 3 villages can not be taken for generalisation. An exhaustive study based on larger number of villages may bring definite conclusions in this regard.

3.3.2 Nature and Significance of Seasonal Wage Fluctuations between months of a year within a village

Villages are grouped in accordance with the percentage gross irrigated area available in 1970-71 to segregate the impact of irrigation on seasonal wage variations. C.V. is worked out to measure the extent of wage variations between months of a year for each village. From the table 3.5, seasonal wage variations appeared unsystematic and highly fluctuating over period in almost all the villages. Year to year behaviour is rather erratic and unpredictable. On one hand, most of the villages exhibited mild seasonal variations after 1976-77; on the other hand, contrary to above, all the villages experienced above 15% fluctuations in 1975-76. Impact of irrigation on the level of seasonal variations is evidently reflected by the table 3.5. Irrigation makes use of H.Y.V. seeds and fertilizers possible and consequently even spread of agricultural activities round the year. It reduces both the degree and the duration of peak and slack seasons. That is why fluctuations appeared to be

TABLE 3.5

Size and Nature of Seasonal Wage Variations Between Months Within the Village : 1967-68 to 1978-79 (C.V.)

	1968-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Villages upto 1% gross irrigated area											
Khanwa	11.78	20.38	4.54	0.00	6.94	7.66	7.13	37.45	43.03	-	31.70
Jesrasar	-	17.64	-	-	-	-	-	-	-	-	-
Jayal	-	27.33	-	-	-	-	-	-	-	-	-
Sekhla	-	-	-	-	33.88	-	-	-	-	-	-
Dhoti	16.20	-	-	-	-	-	11.00	-	-	2.74	33.39
Doomra	-	10.16	5.37	8.23	6.41	8.35	-	-	-	-	-
Khinwasar	-	16.74	-	12.11	-	-	11.24	-	-	-	-
Villages with >1%<25% irrigated Area.											
Amli	-	-	-	-	-	-	10.03	-	8.62	-	9.84
Bamla	-	-	4.80	19.44	16.32	18.76	-	-	10.32	10.11	7.61
Peepli 'A'	-	7.98	15.24	14.43	20.76	20.39	15.94	-	-	0.00	7.67

TABLE 3.5 (contd.)

	1968-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Tausar	18.78	19.87	6.27	5.18	11.96	15.33	13.17	-	-	-	23.62
Sera	-	17.48	-	22.78	-	-	40.31	38.29	-	-	-
Gurali	22.99	12.15	21.64	-	-	-	-	-	-	-	-
Anjana	-	20.04	-	16.50	11.48	9.98	4.67	10.76	14.32	-	-
Bani	29.86	13.50	9.78	19.99	19.00	13.03	15.57	-	21.18	9.98	14.91
Khayra	13.61	28.19	15.11	13.27	21.18	20.04	26.37	19.64	23.38	14.80	7.58
Jhonthri	10.57	-	5.85	7.71	24.05	10.42	-	-	-	-	-
Baropal	11.73	4.09	13.51	11.21	6.06	5.73	-	-	9.47	-	-
Govindpura	27.38	13.82	7.59	6.88	-	-	4.54	19.39	7.89	7.44	4.30
Jagheena	15.57	5.53	7.33	9.14	11.12	4.68	7.38	-	1.43	3.21	-
Karada	-	24.77	17.54	10.61	-	-	19.21	17.91	26.94	11.85	13.55
Nathusar(Sikar)	12.94	8.55	-	-	-	4.86	9.39	-	1.37	-	-
Chokri Khurd	-	18.03	21.54	21.07	19.27	26.61	-	-	-	-	12.89

contd...

TABLE 3.5 (concld.)

	1968-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Village with 7 25% irrigated area.											
Meenapara	-	29.96	30.14	-	18.67	16.18	-	23.27	2.42	-	4.60
K. Machri	21.76	-	16.52	15.05	-	-	11.79	15.17	8.51	-	-
Chitnukhurd	-	6.96	7.21	9.77	6.77	4.77	-	-	-	-	-
Dadiya	15.42	18.18	21.58	13.15	23.17	20.90	19.71	37.02	13.03	8.68	15.86
Ninder	-	18.81	6.58	7.64	12.28	14.30	18.48	-	40.81	5.81	6.72
Dayalanakala	-	45.27	43.91	-	-	-	44.28	35.48	9.23	7.19	0.92
Sohla	-	23.17	9.70	8.11	22.32	18.28	-	-	0.61	-	5.85
Palri	-	4.39	5.95	0.58	-	-	-	-	-	-	-
Deepawas	-	7.98	6.04	10.94	21.25	41.27	-	-	-	-	-
Sayla	-	8.87	13.41	13.45	3.96	10.90	14.87	-	3.19	9.49	-
Mehroli	12.94	-	-	-	12.78	8.62	-	-	-	-	-
Pahoona	11.03	15.73	-	20.85	7.38	-	-	-	-	-	-
Manora	-	26.90	44.23	9.22	24.01	-	-	-	-	9.08	3.48
Bigod	-	5.62	11.80	6.10	-	5.41	8.97	43.22	-	-	10.95
Sukhapura	6.00	15.30	-	6.46	10.45	12.28	-	-	-	-	-
Asind	-	10.48	28.48	-	-	-	-	-	37.51	-	-
Adana	-	1.37	-	-	17.89	-	-	18.73	-	21.34	-
Kuwarti	3.18	6.90	2.32	-	2.38	-	-	-	-	-	-

Source : Appendix Tables.

Note 1) Villages are grouped in accordance with the percentage gross-irrigated area in 1970-71.

2) Wage differentials are worked out only for those villages and years that h[illegible] atleast 10 months wage data in a year.

of lesser magnitude in highly irrigated villages as compared to those in low irrigated villages. Yet intensity of seasonal variations would have mainly depended upon rainfall and other climatic conditions like cold-wave, thunder storm, pests etc. Perhaps owing to these many factors, many of the highly irrigated villages have exhibited unexpected and unexplainable high seasonal fluctuations. None of the villages in either of the categories have shown smooth trend.

Significance test of Seasonal Wage Fluctuations

In most of the years we have found seasonal fluctuations of high magnitude. But the question is: How far are these statistically significant? To test the significance, the technique of Analysis of Variance is employed. Results derived from variance analysis are presented in tabular form No.3.6.

Seasonal fluctuations between villages are highly significant right from 1968-69 to 78-79 (Table 3.6). This implies that seasonal wages differed from village to village significantly. But wage variations between months are highly significant only during the early years of seventies i.e. 1969-70 to 72-73. This implies average means from month to month were not homogeneous upto 1972-73. That is to say, wages varied significantly in response to variations in demand for labour from slack to peak seasons and vice-versa. Wages

TABLE 3.6

Significance Test of Seasonal Fluctuations in Agricultural Wages in Rajasthan : 1968 - 69 to 1978-79 (Analysis of Variance)#

Sources of Variation	Sum of Squares	Degrees of Freedom	Mean Variance	F.Value (F.Ratio)	Sum of Squares	Degrees of Freedom	Mean Variance	F.Value (F.Ratio)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		1968-69 (N=7)				1969-70 (N=20)		
1. Between Villages	33.592	6	5.599	15.704*	127.717	19	6.722	22.678*
2. Between months	3.810	11	0.346	0.972	7.622	11	0.693	2.338*
3. Residual	23.530	66	0.357	-	61.949	209	0.296	-
4. Total	60.932	83	-	-	197.288	239	-	-
		1970-71 (N=15)				1971-72 (N=16)		
1. Between Villages	77.168	14	5.512	47.558*	42.156	15	2.810	25.047*
2. Between months	2.644	11	0.240	2.059**	1.766	11	0.161	1.430
3. Residual	17.975	154	0.116	-	18.528	165	0.112	-
4. Total	97.787	179	-	-	62.450	191	-	-

contd....

TABLE 3.6 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	1972-73 (N=20)				1973-74 (N=11)			
1. Between Villages	355.258	19	18.698	41.495*	363.614	10	36.361	107.387*
2. Between months	10.319	11	0.938	2.508*	4.121	11	0.375	1.106
3. Residual	78.185	209	0.374	-	37.253	110	0.339	-
4. Total	459.762	239	-	-	404.988	131	-	-
	1974-75 (N=7)				1975-76 (N=3)			
	Wage data do not show much variations in mean values, hence not computed.				Wage data for all the 12 months are available only for 3 villages, hence not computed.			
	1976-77 (N=12)				1977-78 (N=12)			
1. Between villages.	491.304	11	44.664	13.815*	104.207	11	9.473	39.357*
2. Between months	53.651	11	4.877	1.509	2.777	11	0.252	1.049
3. Residual	391.214	121	3.233	-	29.128	121	0.240	-
4. Total	936.169	143	-	-	136.111	143	-	-
	1978-79 (N=6)							
1. Between villages.	67.947	5	13.590	4.756*				
2. Between months	9.641	11	0.876	0.307				
3. Residual	122.877	43	2.858	-				
4. Total	200.464	59	-	-				

Note : #Based on only those villages having 12 months data in a year.
*Significant at 1 percent level of confidence.
**Significant at 5 percent level of confidence.

remained highly responsive to changes in demand. This leads us further to explore the possible shape of labour supply curve that would have existed (i) upto 1972-73, and (ii) after 72-73.

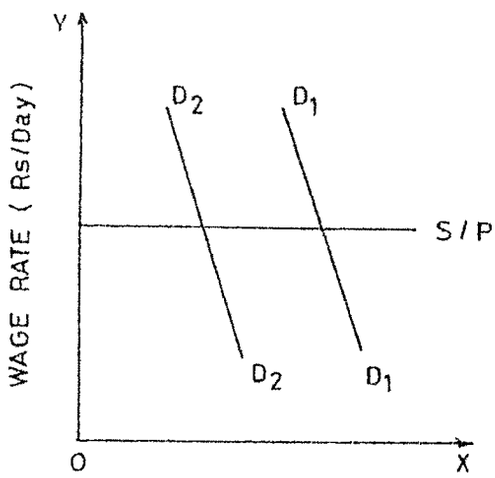
3.3.3 Possible shape of Labour Supply Curve

We visualize three alternative shapes of labour supply curve during the period 1969-70 to 1972-73 as shown in Graph III.4. Graph III.4'A' represents horizontal or perfectly elastic supply curve for labour, where, wages do not change in response to variations in demand. Between demands D_1 and D_2 viz. peak and off season demands, wages do not change at all. It implies that despite an increase in demand from D_2 to D_1, the labour supply was elastic enough to meet the increased demand at the prevailing wage rate oP. Therefore, it exhibits no seasonal wage fluctuations. As it is contrary to our statistical results, we outrightly reject posibility 'A'. This further suggests that there would not have existed excess labour force too. It means labour supply curve would have remained upward sloping rather than horizontal as depicted in GraphIII.4.'C'. In 'C', wages appear to be positively changing from oP_1 to oP in response to change in demand from D_1 to D_2 and vice-versa. In other words, higher the demand, higher the wage rate during the peak season; lower the demand, lower the wage rate during slack season. This logic and diagramatic position of labour supply curve fits in with our results.

GRAPH III·4

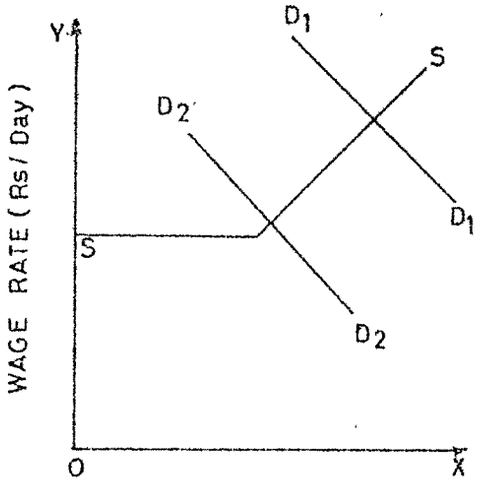
POSSIBLE SHAPE OF LABOUR SUPPLY CURVE PREVAILING IN AGRICULTURE IN RAJASTHAN

'A'



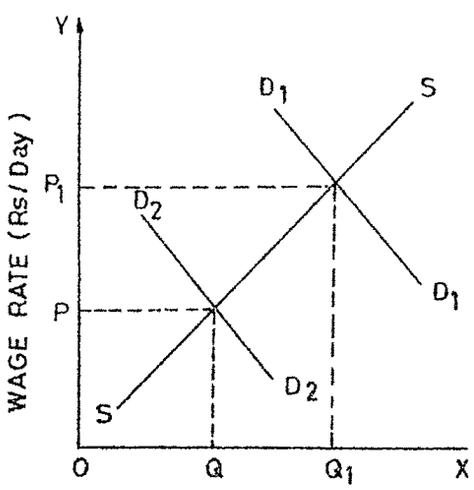
DEMAND AND SUPPLY OF LABOUR.

'B'



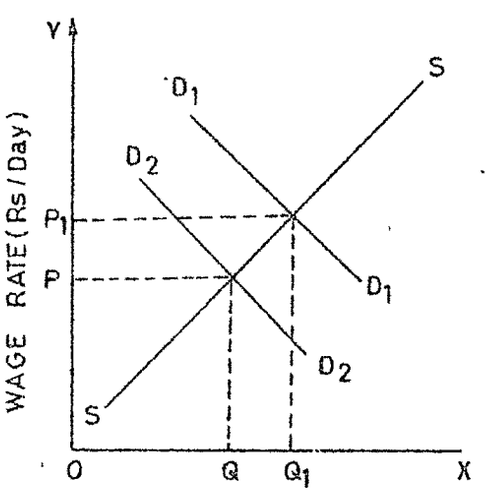
DEMAND AND SUPPLY OF LABOUR.

'C'



DEMAND AND SUPPLY OF LABOUR.

'D'



DEMAND AND SUPPLY OF LABOUR.

which are also in conformity with the results of a study conducted by Fonseca.[12]

However, there prevails a general belief about the existence of surplus labour force in agricultural sector. If we accept surplus labour force to exist, it would have been of lesser magnitude in comparison to demand variations, as our results of variance analysis suggest. In other words, demand curve would have intersected labour supply curve in its upward sloping part rather than in horizontal as depicted in Graph III.4.B. That is to say, even slack period demand falls above the horizontal part or exceeds the surplus labour situation represented by horizontal part of supply curve.

Seasonal wage variations from 73-74 to 78-79 are insignificant. Insignificant results warrant explanation of some of the important questions like: What do these results signify? What would have been the possible shape of labour supply curve during these years of middle and late seventies? What would have been the plausible explanation for the situations contrary to those of earlier years?

In earlier years, the situation was that of a upward sloping labour supply curve. Since the variance analysis results from 1973-74 to 78-79 are insignificant (see table 3.6),

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12. Fonseca, A.J., "Wage Issues in a Developing Economy: The Indian Experience", O.U.P. Bombay, 75, Chapt. III.

can one infer about the possibility of horizontal labour supply curve during these years as depicted in Graph III.4'A'. To draw such conclusion would mean over-looking of agricultural performance in Rajasthan during these years. Therefore, the situation warrants an exhaustive exploration.

Variance analysis results are based on only those villages having wage data for all the 12 months in a year. Number of villages having wage data for all the 12 months in the years of non-significant results are very low comparing to earlier years. Perhaps lower number of villages included in variance analysis would have affected results. Number of villages included for analysis during 74-75, 75-76 and 78-79 ranges between 3 to 7 only. Therefore, needs further probing.

First, we take up: why do insignificant seasonal variations in wages appear? These may appear in two extreme conditions. One would be the worst and other would be the best agricultural situations. In the worst situation, labour supply curve would be of 'A' shape having abundant idle labour force devoiding influence of increased peak season demand on wage rate. While in the best and highly developed agricultural situations, duration between slack to peak periods would be reduced to the least and the magnitude of variation in demand between the two would also be of lesser degree as explained in 3.3. Therefore, in highly developed agricultural situations, one may expect seasonal wage fluctuations as portrayed in Graph.III.4'D'. It depicts that fluctuations between lean and peak season demands from

Q to Q_1 and consequent variations in wage rates from P to P_1 respectively, are of lower degree as compared to those of Graph III.4'C'. The intensity of fluctuation in demand from Q to Q_1 and consequently change in wage rate from P to P_1 is comparetively much higher in Graph III.4'C'. That is why seasonal variations were found statistically significant. Though Graph III.4'D' is an indicative of the existence of seasonal variations in wages, yet variations are not as high as would have been stitistically significant. It implies seasonal variations were of mild degree. Graph III.4'A' shows non-existence of fluctuations in wage rates, while the results of variance analysis do indicate about their existence. Therefore, situation 'A' would have not prevailed during late seventies.

Then, there are statistical evidences suggesting that agricultural condition remained better with respect to agricultural production, spread of irrigation, use of H.Y.V. seeds and other improved practices during late seventies in Rajasthan. Index of agricultural production went up from 140.34 in 71-72 to 180.66 in 75-76[13] (with base 1959-60 to 1961-62 = 100). Gross irrigated area expanded from 2440 thousand hectares in 71-72 to 2975 thousand hectares in 75-76.[14]

13. Statistical Abstract Rajasthan 1976 published by the Directorate of Eco. & Sta. Rajasthan, Jaipur, p.37.

14. Regional Statistics of Rajasthan : 1961-1978 published by the Directorate of Eco. & Sta. Rajasthan, Jaipur, p.24.

Not only production increased, but real wages of agricultural labourers (casual adult male), also enhanced from Rs.1.69 to Rs.2.00 during the corresponding period.

These are some of the indicators of developing agricultural situation prevailing in these years. Hence, acceptance of situation contained in 'D', in general, would not be exaggerated. Therefore, labour supply curve should have also remained upward sloping during late seventies.

As mentioned earlier, smaller number of observations (villages) might have also affected results of variance analysis. As such, it would be in the fitness of the agrument to increase the number of observations by including those villages also having atleast 10 months instead of 12 months wage data in a year. Results of variance analysis (see table 3.7) based on larger number of observations, indicate that seasonal wage fluctuations were significant in 74-75, 76-77 and 78-79 in new positions.

TABLE 3.7

Significance Test of Seasonal Fluctuations in Agricultural Wages in Rajasthan (Analysis of Variance*)

Year	N	F-ratio	Significance level
1968-69	17	1.1606	Not Significant.
73-74	25	0.8411	Not Significant.
74-75	22	3.3768	Significant at 1% level.
75-76	12	0.7268	Not significant
76-77	24	2.2800	Significant at 1% level
77-78	21	0.8188	Not significant
78-79	23	1.6152	Significant at 10% level

Note * Based on villages having atleast 10 months wage data in a year.

Only four years (1968-69, 73-74, 75-76 and 77-78) are left now in which fluctuations were not significant. In 1975-76, again, the number of observations are limited to only 12. However, our argument holds ground to some extent and acceptance of situation 'D' in these years seems to be logically justified and the hypothesis about the prevalence of upward sloping labour supply curve is also justified.

3.4 Operation-wise Wage Differentials

Since agricultural operations are carried out at different times, wage rates for various operations are expected to differ considerably not only among the villages; but within, the village also. Further, operations are time bound and depend very much upon the climatic conditions. Some of the operations like weeding and transplanting are general by nature and do not need higher degree of physical toil. Contrary to it ploughing is a strenuous work . It is mainly reserved for adults. Therefore, higher wage variations are expected to exist based on operations.

3.4.1 Annual wage rates by operations and villages are presented in table 3.8 villages having wage data for all the six operations under-study, are included for the examination of wage differentials by operations. One finds from the table 3.8 that perceptible differences existed among the villages for the same operation. Likewise, wages for various operations also varied even within the village. During 1969-70, the lowest wage rate was Rs.1.00 for Transplanting in Karada and Meemapara villages; while the highest wage was Rs.5.00 for ploughing, sowing and weeding operations. The ratio of the highest wage to the lowest wage remained Rs.5.00. Such high wage differentials existed to continue, over the period , during 1978-79. The ratio of the highest wage to the lowest wage existed to be 3.25. Looking to such persistently high wage differentials, it is proposed to examine operation-wise wage differentials (i) within the village; and (ii) among the villages.

TABLE 3.8

Annual Daily Wage Rates by Operation and Village : 1968 - 69 to 1978- 79.

(Rs./day)

Operation / Village	Ploughing	Sowing	Weeding	Irrigation & Allied Activities	Reaping and Harvesting	Transplanting
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			1968 - 69			
Dadiya	2.38	2.75	2.00	-	2.00	-
Khayra	2.81	2.58	2.50	-	2.00	-
Salarpura	3.63	2.50	2.50	-	2.08	-
K. Machri	3.57	3.00	2.00	-	2.05	-
Jagheena	4.17	4.25	3.75	-	4.50	-
Khanwa	3.46	3.69	3.10	-	3.32	-
Asind	2.31	2.25	2.34	-	2.38	-
Bigod	2.50	2.50	2.25	-	2.25	-
Kuwarti	3.00	3.00	3.00	-	2.93	-
Sukhpura	2.50	2.50	2.50	-	2.64	-
Pahoona	2.61	2.67	2.33	-	2.80	-
Adana	2.50	3.00	3.00	-	2.25	-
Bigga	5.00	6.00	3.75	-	2.72	-
Karada	1.94	2.13	1.75	-	1.94	-
Jhonthri	2.00	2.17	1.88	-	1.88	-
Baropal	4.97	4.88	4.92	-	5.10	-
Ninder	3.38	3.25	2.75	-	3.79	-
Chitanukhurd	2.50	2.50	2.00	-	2.25	-
Govindpura	2.68	2.75	2.42	-	2.96	-
Bani	2.18	2.38	1.77	-	2.67	-
Doomra	4.25	4.25	3.25	-	3.63	-
Khinwasar	4.00	3.94	3.25	-	3.63	-
Dhoti	3.00	3.00	3.00	-	2.65	-
Jayal	3.93	3.63	3.00	-	3.14	-

contd...

TABLE 3.8 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Tausar	4.09	3.78	3.44	-	4.17	-
Deepawas	3.62	3.46	1.72	-	2.12	-
Dayalanakalan	3.96	3.07	2.25	-	2.37	-
Gurali	3.71	3.40	1.40	-	2.04	-
Nathusar (Sikar)	3.13	3.67	3.50	-	3.30	-
Mehroli	3.13	3.67	3.50	-	3.30	-
Manora	2.50	2.06	2.13	-	1.84	-
Palri	2.10	2.05	2.50	-	2.17	-
Sohla	3.67	3.00	1.33	-	2.20	-
Amli	2.25	2.25	1.50	-	1.92	-
Sare	2.33	2.00	2.50	-	2.17	-
Peepli 'A'.	2.00	2.00	2.25	-	2.10	-
		1969-70				
K.Machri	4.00	3.63	2.25	2.68	2.50	2.00
Anjana	2.58	2.63	2.00	1.88	1.67	1.50
Jagheena	5.00	4.14	5.00	4.50	4.25	4.00
Khanwa	3.61	3.00	3.00	3.11	3.17	3.50
Bigod	2.50	2.50	2.50	2.44	2.50	2.50
Asind	2.33	2.67	2.33	2.00	2.25	2.33
Kuwarti	3.00	3.67	3.00	3.00	2.96	3.00
Pahoona	3.06	2.50	2.43	2.40	2.42	2.50
Karada	2.71	1.92	2.65	2.25	2.84	1.00
Baropal	4.79	4.78	4.50	4.75	4.75	4.50
Ninder	5.00	5.00	4.43	3.25	3.20	3.00
Chitanu-Khurd	2.10	2.50	2.50	2.32	2.50	2.00
Bani	1.85	1.80	1.83	1.76	2.00	1.50
Chokrikhurd	3.33	2.25	1.25	2.11	2.15	2.00
Tausar	4.50	4.50	2.81	3.00	3.00	2.75
Deepawas	2.46	2.08	1.71	2.11	1.51	1.81
Gurali	3.57	3.00	2.25	3.83	3.47	3.00
Meenapara	2.25	2.38	1.25	1.96	1.90	1.00
Mehroli	3.00	3.00	3.00	3.06	2.90	3.00
Palri	2.50	2.37	2.30	2.34	2.37	2.37
Sohla	3.17	3.20	1.89	1.86	2.22	1.25
Peepli 'A'	2.08	2.00	2.00	2.00	2.00	1.50

contd.....

TABLE 3.8 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
		1970-71				
Dadiya	2.11	2.30	1.83	2.00	1.94	2.00
K. Machri	3.75	3.50	2.30	2.75	2.50	2.75
Anjana	2.07	2.10	2.00	2.00	2.00	2.00
Jagheena	5.00	5.00	4.00	4.79	4.14	4.00
Khanwa	3.00	3.00	3.00	3.00	3.20	3.00
Asind	3.20	4.00	2.42	2.00	2.17	2.17
Bigod	2.64	2.75	2.52	2.41	2.50	2.50
Pahoona	2.50	2.50	2.50	2.50	2.50	2.50
Adana	2.00	2.00	2.00	2.00	2.00	2.00
Karada	1.90	2.50	2.10	2.33	2.20	2.17
Baropal	4.95	4.91	4.90	4.83	5.10	5.00
Chitanu Khurd	2.80	2.63	2.67	2.90	2.75	2.75
Sayla	3.44	2.39	2.44	2.72	2.80	2.00
Doomra	3.64	3.60	3.38	3.67	3.40	3.50
Sekhla	3.67	3.67	2.67	2.00	3.10	2.67
Chokrikhurd	4.60	4.33	2.36	2.79	2.92	2.33
Tauser	3.44	3.79	3.00	3.00	3.50	3.00
Deepawas	2.50	2.06	1.75	2.17	1.44	2.00
Dayalana K.	9.00	2.17	2.00	2.25	2.20	2.00
Meenapara	2.25	2.50	1.44	2.31	2.38	1.25
Gurali	4.00	3.50	2.67	3.88	2.39	2.50
Mehroli	3.33	3.33	3.00	2.80	3.27	3.00
Sohla	3.00	3.00	2.17	2.52	2.40	3.00
Sare	2.00	2.00	2.75	2.12	4.25	1.50
		1971-72				
Dadiya	2.11	2.17	2.25	2.21	2.20	2.00
K. Machri	3.75	3.00	2.50	3.45	3.00	2.63
Anjana	5.00	3.00	3.14	4.21	3.75	2.50
Jaghaena	5.14	4.33	4.30	4.83	4.00	4.50
Khanwa	3.00	3.00	3.00	3.00	3.00	3.00
Asind	3.00	3.33	1.90	1.98	2.25	2.00
Bigod	2.50	2.50	2.33	2.50	2.40	2.50
Sukhpura	2.47	2.33	2.41	2.43	2.38	2.15
Pahoona	3.50	2.70	2.50	3.33	2.60	2.50
Adana	2.00	2.00	2.00	2.00	2.00	2.00
Karada	2.42	2.50	2.00	2.00	2.38	2.00

contd....

TABLE 3.8 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Baropal	6.68	6.97	6.40	7.13	7.05	6.50
Chitanukhurd	3.00	3.33	2.83	3.25	3.00	3.33
Sayla	4.35	3.50	2.83	3.23	3.36	3.00
Bani	2.10	2.20	1.08	1.86	1.94	2.00
Doomra	3.70	3.66	3.50	3.83	3.58	3.50
Chokri Khurd	4.20	3.80	2.71	3.03	3.04	3.00
Tausar	3.50	3.50	2.96	3.05	3.17	3.00
Deepawas	2.45	2.30	1.81	2.29	1.86	2.00
Meenapara	2.80	2.67	1.50	2.30	2.25	2.25
Gurali	4.30	4.00	1.83	3.65	2.78	2.00
Palri	2.39	2.39	2.39	2.39	2.38	2.39
Sohla	3.25	3.30	2.79	3.00	2.94	3.00
Amli	3.50	3.50	2.00	2.00	2.03	2.00
Peepli 'A'	3.93	2.50	2.50	2.00	2.50	2.50
		1972-73				
Dadiya	2.13	2.00	2.00	2.09	1.83	2.00
Anjana	5.00	4.33	4.14	4.48	4.25	4.50
Jagheena	5.13	4.40	4.00	4.50	4.08	4.17
Khanwa	3.21	3.20	3.33	3.29	3.50	3.36
Sukhapura	2.65	2.50	2.58	2.56	2.50	2.00
Pahoona	2.95	2.88	2.43	2.85	2.69	2.50
Adana	2.50	2.00	2.63	2.38	2.42	2.00
Baropal	7.54	7.88	7.17	7.57	7.36	7.21
Chitanu Khurd	3.83	3.83	3.17	3.57	3.75	3.50
Sayla	4.17	3.50	3.50	3.42	3.64	3.00
Doomra	3.78	3.75	3.63	3.75	3.75	3.50
Chokri Khurd	3.57	3.50	2.38	2.70	2.64	2.63
Bamla	4.20	4.00	2.13	3.67	4.00	2.50
Tausar	3.57	4.00	3.18	3.25	3.83	3.33
Deepawas	2.75	2.63	2.00	2.49	2.58	2.33
Dayalana Kalan	11.67	2.00	2.50	2.00	2.00	2.00
Meenapara	2.75	2.35	1.25	2.38	2.63	1.50
Gurali	4.50	4.33	2.00	3.88	2.69	3.00
Nathusar (Sikar)	3.00	3.00	3.00	3.00	3.00	3.00
Mehroli	4.17	3.80	3.33	3.29	3.60	3.40
Manora	2.33	2.33	2.50	3.43	2.75	3.33
Peepli 'A'.	4.13	2.58	2.50	2.00	2.50	2.50

TABLE 3.8 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
		1973-74				
Dadiya	2.75	3.17	2.92	2.55	2.54	2.83
K. Machri	4.00	4.00	2.50	4.20	3.56	3.00
Anjana	5.00	4.20	3.67	4.70	4.60	3.67
Khanwa	5.50	6.00	4.90	5.06	5.02	4.57
Bigod	2.67	2.75	2.50	2.59	2.63	2.50
Sukhpura	3.25	3.20	3.33	3.56	3.50	3.00
Adana	3.20	3.25	3.25	3.20	3.17	3.00
Karada	2.60	2.50	2.00	2.10	2.17	1.88
Baropal	8.63	8.96	8.38	8.87	8.95	8.75
Sayla	3.63	3.00	3.23	3.22	3.37	3.00
Doomra	3.89	3.75	3.70	3.83	3.79	3.70
Chokri Khurd	7.17	7.00	4.00	5.54	4.14	3.88
Bamla	4.00	4.00	3.20	3.67	3.71	2.67
Tausar	3.44	4.60	3.36	3.34	3.80	3.42
Deepawas	7.00	7.50	2.83	2.56	3.07	4.00
Dayalana	10.00	2.33	2.50	2.75	2.75	2.00
Meenapara	3.17	3.13	2.43	3.00	3.10	2.50
Gurali	5.60	5.00	2.00	3.50	3.55	2.50
Manora	4.50	4.60	2.92	3.03	3.00	3.00
Sohla	3.25	3.00	2.17	2.25	2.50	2.00
Peepli 'A'	4.92	3.36	3.00	2.60	3.96	2.03
		1974-75				
Dadiya	2.59	2.50	2.38	2.56	2.67	2.00
K. Machri	6.16	6.20	4.33	4.41	4.77	4.28
Khanwa	5.61	5.50	5.50	5.79	5.90	5.50
Bigod	2.72	3.00	2.83	2.79	2.59	3.00
Adana	3.75	3.75	3.63	3.63	3.67	3.75
Karada	2.33	2.42	1.86	2.40	2.50	1.67
Baropal	9.29	9.36	9.67	10.14	9.30	8.90
Ninder	6.50	6.67	4.50	4.83	5.00	4.00
ChitanuKhurd	4.00	4.00	4.00	4.14	4.00	4.00
Sayla	5.46	6.00	6.00	5.44	6.00	6.00
Bani	2.92	2.67	2.00	2.44	2.71	3.00
Doomra	4.00	4.00	4.00	4.00	4.00	4.00
Chokri Khurd	5.33	5.00	3.70	4.25	3.25	4.50
Bamla	3.75	3.75	3.40	3.43	3.25	3.67

TABLE 3.8 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Tausar	3.40	4.00	3.40	3.40	3.80	3.50
Meenapara	3.50	2.63	2.50	3.72	3.40	2.67
Gurali	5.75	6.00	2.60	6.00	3.72	3.25
Amli	3.65	3.56	3.06	3.20	3.25	3.00
Peepli 'A'.	5.40	3.50	3.50	3.00	3.24	4.25
			1975 - 76			
K. Machri	6.29	5.80	5.14	5.33	5.04	4.36
Anjana	5.75	5.75	5.80	5.90	5.25	5.75
Jagheena	6.50	6.33	5.00	5.92	6.00	6.00
Khanwa	10.50	9.50	4.33	5.00	7.30	6.00
Asind	18.33	20.00	3.50	8.42	4.00	3.40
Bigod	4.13	3.60	3.75	5.10	3.67	3.33
Pahoona	7.78	10.60	9.50	4.58	4.61	4.00
Adana	10.00	10.00	7.29	7.06	7.14	13.00
Karada	3.88	3.83	3.25	3.60	3.36	3.00
Baropal	11.75	12.00	10.00	11.63	11.00	10.00
Jhonthri	5.00	5.00	5.00	5.00	5.00	5.00
Ninder	7.71	8.40	4.60	5.61	7.33	9.67
Chitanukhurd	4.83	4.60	4.43	4.60	4.75	5.00
Sayla	5.75	5.70	5.50	5.96	5.83	5.83
Bani	3.56	3.50	2.00	2.63	3.00	3.00
Chokri Khurd	5.00	5.00	5.00	5.94	5.75	5.00
Dayalana Kalan	13.00	4.40	4.50	4.25	4.75	4.20
Nehroli	5.00	5.00	5.00	5.00	5.00	5.00
Meenapara	5.17	4.60	3.10	4.29	4.76	2.83
Nathoosar (Sikar)	5.50	5.50	5.33	5.43	5.33	5.00
Manora	3.60	3.60	4.00	3.88	3.75	3.00
Amli	4.00	3.67	4.20	4.50	5.00	4.00
Sohla	5.00	5.00	5.00	5.00	5.00	5.00
Peepli 'A'	5.14	4.81	5.00	5.00	5.00	5.00
Sare	7.50	7.50	5.00	5.00	6.11	5.00
			1976-77			
Dadiya	5.44	5.40	5.00	5.25	5.00	5.00
K. Machri	7.80	7.88	6.25	6.63	6.97	6.36
Anjana	5.80	6.00	6.40	5.57	5.60	6.40
Jagheena	6.00	6.00	5.67	6.00	6.00	6.00

contd....

TABLE 3.8 (contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Asind	16.00	14.80	4.00	9.56	4.50	4.13
Bigod	5.00	5.00	5.00	5.00	5.00	5.00
Pahoona	4.33	4.50	4.00	4.33	5.00	4.00
Adana	9.29	10.00	5.00	7.00	9.17	4.00
Karada	5.34	4.92	4.25	5.25	5.25	4.25
Baropal	11.73	11.80	11.14	12.15	12.45	11.71
Ninder	8.88	7.70	7.00	9.25	10.39	7.25
ChitanuKhurd	5.00	5.00	5.00	5.00	5.00	5.00
Sayla	5.58	5.42	5.50	5.64	5.50	5.50
Govindpura	5.33	5.33	4.86	4.86	5.17	4.50
Bani	4.38	4.50	3.17	3.88	3.95	4.00
Sekhla	6.42	7.00	6.75	6.80	5.50	6.88
Bamla	6.33	6.00	5.00	6.00	6.00	6.00
Dayalana Kalan	5.50	4.67	5.00	5.31	5.20	5.00
Meenapara	8.00	8.00	8.00	8.00	7.67	8.00
Gurali	5.00	5.00	5.00	5.00	5.00	5.00
Nathoosar (Sikar)	5.00	5.10	5.00	5.00	5.00	5.00
Mehroli	5.25	6.00	5.00	5.00	5.50	5.00
Manora	4.17	4.00	3.86	4.40	3.92	4.00
Sohla	5.00	5.00	5.00	5.00	5.00	5.00
Amli	5.00	5.00	5.25	5.50	5.75	5.00
Sare	5.00	5.00	5.00	5.00	5.00	5.00
Peepli 'A'.	5.00	5.00	5.00	5.00	5.00	5.00
		1977-78				
Khayra	8.00	8.00	5.00	5.85	5.00	10.00
Dadiya	5.40	6.40	5.40	4.97	5.00	5.00
Anjana	5.00	5.00	5.00	5.00	5.00	5.00
Jagheena	6.56	6.71	6.00	6.00	6.00	6.00
Pahoona	5.00	5.00	5.00	5.00	5.00	5.00
Baropal	11.63	11.86	11.50	11.43	13.00	11.25
Ninder	11.50	11.20	7.25	8.10	7.00	8.00
Sayla	5.50	5.33	5.13	5.48	5.61	5.25
Govindpura	5.29	5.17	5.20	5.11	5.00	6.00
Bani	5.60	5.00	5.20	5.17	5.67	4.50
Sekhla	6.80	6.67	6.75	6.86	6.83	6.75

contd.....

TABLE 3.8 (concld)

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Chokri Khurd	6.83	7.00	5.83	6.92	6.50	5.00
Tausar	7.00	5.00	8.67	6.80	8.00	6.50
Dayalana Kalan	5.83	5.00	5.00	5.14	5.04	5.00
Meenapara	8.33	8.50	6.00	8.00	8.00	8.00
Manora	4.75	4.67	4.00	4.67	4.57	4.00
Sohla	5.00	5.00	5.00	5.14	5.00	5.00
Peepli 'A'	5.00	5.00	5.00	5.00	5.00	5.00
Sare	5.00	5.00	5.00	5.00	5.00	5.00
		1978 - 79				
Dadiya	5.75	6.50	5.80	5.01	5.44	5.07
K. Machri	5.00	5.00	5.56	5.08	5.00	5.00
Jagheena	7.75	7.00	6.50	7.33	7.50	7.00
Bigod	5.00	5.00	7.50	5.00	5.00	5.00
Karada	6.80	6.80	5.75	6.50	7.25	4.25
Baropal	13.00	13.00	13.00	13.00	13.00	13.00
Ninder	10.40	10.40	8.00	8.46	8.56	8.00
Chitanu Khurd	10.00	10.00	5.00	5.00	5.00	5.00
Sayla	5.00	5.25	6.00	8.50	8.50	7.50
Govindpura	5.00	5.00	4.14	4.73	5.00	5.00
Bani	5.40	4.00	4.25	4.00	4.60	4.00
Chokri Khurd	9.55	9.55	6.57	9.52	9.54	7.00
Dhoti	9.00	5.00	4.00	5.00	5.00	4.00
Tausar	8.00	9.00	7.67	6.71	8.50	8.00
Dayalana Kalan	5.00	5.00	5.13	5.00	5.00	5.00
Gurali	5.00	5.00	5.00	6.50	5.33	5.00
Sohla	5.14	5.20	5.00	5.17	5.00	5.00
Amli	7.50	8.00	8.00	6.78	6.67	8.00
Peepli 'A'.	5.43	5.43	5.00	5.00	5.29	5.00

Source : Appendix Table

Note : Worked out by simple averaging of operation-wise wage data for all the 12 months.

3.4.2 Statistical Variations in Operation-wise Wages

Coefficient of Variation is worked out to measure the size of wage differentials between various agricultural operations within a village and to investigate into the possible tendency their of over the period. Table 3.9 depicts the size and the behaviour over the yesrs. Though the general pattern of wage variations between operations within a village seems declining over the period, yet, year to year, it is rather fluctuating unsystematically. In none of the villages a smoothly and steadily falling pattern is noticed.

Further, very severe fluctuations in wage differentials are also absent in most of the villages and years. Coefficients of variations seem to centre around 10 percent, though exceptions exist. Variations had a tendency to increase contrary to general belief, in some of the very highly irrigated villages like Asind, Bigod, Adana etc.

TABLE 3.9

Co-efficient of Variation in Operation-wise Wage Rates

Area	1969-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Village upto 1% irrigated area.										
Sekhla	-	20.03	-	-	-	-	-	7.65	0.67	-
Khanwa	7.34	2.41	-	3.02	8.80	2.75	31.81	-	-	-
Doomra	-	3.10	3.27	2.72	1.93	-	-	-	-	-
Villages with 1% & <25% irrigated area										
Amli	-3	-	27.98	-	-	7.21	10.13	5.56	-	7.67
Bamla	-	-	-	23.47	13.40	5.41	-	6.97	-	-
Kakenseja	-	-	-	-	-	-	-	-	-	-
Peepli 'A'	9.92	-	22.63	24.66	22.73	21.01	2.01	-	-	3.87
Jesrasar	22.33	9.42	7.12	8.53	12.21	6.62	-	-	16.55	8.91
Sare	-	36.26	-	-	-	-	18.63	-	-	-
Gurali	16.01	20.78	30.99	26.56	34.35	30.33	-	16.01	-	10.31
Anjana	21.01	1.80	23.05	6.15	11.85	-	3.68	5.66	-	-
Bani	8.15	-	19.61	-	-	12.53	17.93	10.77	7.56	11.45
Baropal	2.73	1.66	4.03	3.30	2.29	4.06	7.34	3.39	4.88	-
Govindpura	-	-	-	-	-	-	-	6.01	6.19	6.64
Jagheena	8.75	9.95	8.27	8.54	-	-	7.96	1.99	4.85	5.59
Karada	28.22	8.29	9.86	-	11.55	14.09	8.88	9.53	-	15.96
Chokri-khurd	28.03	28.04	15.75	15.72	26.20	16.39	7.60	-	11.35	15.13

contd.....

TABLE 3.9 (concld.)

	1969-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Villages with > 25% irrigated area										
Meenapara	28.02	23.93	17.84	26.12	10.41	15.74	20.98	1.49	10.63	-
K. Machri	25.69	17.74	14.31	-	17.26	16.50	11.29	9.28	-	3.93
Chitanu Khurd	8.65	3.32	6.14	6.32	-	1.36	3.88	-	-	35.28
Dodiya	-	7.19	3.80	4.54	7.85	8.93	-	3.70	9.36	8.96
Ninder	21.54	-	-	-	-	18.56	23.37	14.31	20.53	11.58
DayalanaKala	-	78.37	-	96.39	75.75	-	54.72	5.18	5.82	0.91
Sohla	31.34	12.59	5.68	-	18.02	-	-	-	1.09	1.79
Deepawas	15.90	16.50	11.18	10.01	44.69	-	-	-	-	-
Sayla	-	16.99	14.30	9.79	6.76	4.39	2.53	1.32	3.85	21.22
Mehroli	1.53	6.43	-	8.61	-	-	-	6.90	-	-
Pahoona	8.94	-	14.03	7.04	-	-	37.87	7.74	-	-
Manora	-	-	-	16.07	21.05	-	8.77	4.49	7.19	-
Bigod	0.73	4.29	2.60	-	3.49	5.17	14.62	-	-	17.16
Asind	8.29	26.74	22.71	-	-	-	72.60	56.91	-	-
Adana	-	-	-	10.22	2.58	1.48	23.80	30.65		

Source : Table 3.8

Size and Nature of Operation-wise Wage Differentials Between Villages

Coefficient of Variation is worked out to measure the size and nature of wage differentials by operations. Table 3.10 reveals that operation-wise wage differentials between villages stick to around 30 percent at the minimum and 55 percent at the maximum.

The extent of wage differentials by operations seemed to prevail very high, though the skill and the exercise needed for a particular operation are homogeneous at different places. It implies, it is not the skill and the nature of the operation, but the demand and supply of labour conditions, that determine wage rates to a larger extent. It is further proved by the fact that variation in wage rates of all the six operations was not very high in a year. Of the six operations, wage differentials

were found at peak for ploughing and sowing operations; while, for weeding and transplanting, these were next to the highest. Lowest wage differentials were observed for irrigation and harvesting.

The general trend that emerged for the operation-wise wage differentials was widening over period upto 1975-76; there after a narrowing phenomenon prevailed upto 1977-78. Again, an expansion was noticed in wage differentials during 1978-79. In short, wage differentials expanded over a decade period.

Significance Test of Operation-wise Wage Differentials

In the foregoing analysis it is seen that operation-wise wage differentials were high and expanded over the period. But the question is : how far these differentials between villages based on operations and between operations based on villages are statistically significant? Whether operations did cause significant wage differentials in a year or not?

Villages having wage data for all the six operations under study are included for the purpose of variance analysis. Variance analysis for the year 1968-69 is based on the wage data of only four operations*

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*. Wage data for Irrigation and Transplanting were not collected by the Govt. Agency during the year 1968-69.

TABLE 3.10

Size and Nature of Wage Differentials in Agriculture by Operation and Year: 1968-69 to 1978-79 (C.V.)

Years \ Operations	Ploughing	Sowing	Weeding	Irrigation allied works	Reaping and Harvesting	Transplanting
1968-69	26.77	28.56	29.53	-	30.71	-
1969-70	30.09	30.69	36.83	30.79	28.88	38.52
1970-71	43.81	28.70	28.29	29.01	29.48	30.66
1971-72	32.19	31.71	38.55	37.92	35.60	35.76
1972-73	49.85	37.10	38.78	35.55	34.38	38.11
1973-74	42.28	40.40	40.57	40.54	37.35	42.63
1974-75	37.03	39.31	45.10	41.83	39.11	39.35
1975-76	50.13	54.84	34.31	31.25	29.74	44.64
1976-77	40.07	38.23	27.71	30.27	32.10	28.96
1977-78	30.76	32.42	28.27	26.67	31.36	30.67
1978-79	33.07	35.08	32.53	33.17	32.76	34.70

Source : Table 3.8

TABLE 3.11

Significance Test of Operation-wise Wage Differentials : 1968-69 to 1978-79 (Analysis of Variance)

Year	Observation	F-ratio	Year	Observation	F-ratio
1968-69	36	10.3239*	1974-75	19	4.8926*
1969-70	22	11.0074**	1975-76	25	4.0618*
1970-71	24	5.1067*	1976-77	27	3.2737*
1971-72	25	13.6415*	1977-78	19	1.7765
1972-73	22	4.5354*	1978-79	19	2.0415**
1973-74	21	8.4986*			

* Significant at 1% level of confidence.
** Significant at 5% level of confidence.

Table 3.11 highlights the fact that operation-wise wage fluctuations are highly significant right from 1968-69 to 78-79. Operations do cause wage fluctuations significantly. Wages fluctuate not only because of months and seasons, but because of operations also. Operation-wise wage differentials presented in table 3.10 are not only high, but statistically significant also.

There is a decline in the significance level of operation-wise wage differentials during the last two years. This indicates a reduction in the disparity of wage rates of various operations. That is to say, low wage operations in the initial period command now better wages. Demand for such operations has increased sufficiently due to new production-technology (water-seed-fertilizer- innovations). It further, implies that difference in the quantum of demand of peak and slack season operations has contracted. In other words, intensity of fluctuations in the demand for labour between the two extreme seasons would have declined.

3.5 Conclusion

Geographical wage variations existed between villages in Rajasthan; and the pattern was rather erratic. The ratio of the highest wage village to the lowest wage village showed a gently declining trend; while, the C.V. showed a modestly rising trend.

Wage differentials were high in the desert region, a region of the lowest irrigation potential. Differentials were low in regions where irrigation potential was relatively higher.

Since seasonality is inevitable in agriculture, wages are expected to fluctuate between slack and busy months. Spatial wage differentials were generally found higher during slack months; while, lower in the busy months of October to December.

Since irrigation is supposed to reduce temporal wage variations between the months within a village, monthly wage variations rather increased highly and inconsistently in many of the highly irrigated villages. Hence, no pronounced trend seems to be established. This means that the degree of temporal wage differential is determined by factors other than the irrigation potentials alone.

Results of Analysis of Variance do indicate that seasonal wage variations among the villages were highly significant right from 1967-68 to 78-79, while among the months, these were significant in most of the years implying that labour supply curve would have prevailed upward sloping rather than horizontal. This further suggests that wages were demand elastic.

Graphical examination of seasonal wage fluctuations reveals that by and large, these were identical in their month to month movements over the entire period understudy. Intensity of temporal wage fluctuations and that of irrigation remained inversely correlated.

The analysis further highlights the fact that a pronounced wage cycle prevailed in seasonal wage movements. Wages in agriculture touched peak in July, November, April, May and June, and trough in September, January and February. Wages receded in August and December, and recovered in October and March. More precisely, August, October, December and March emerged as moderate wage months.

Operation-wise wage differentials within a village, observed a slightly declining trend in general; yet in many of the highly irrigated villages, wage differentials between operations expanded over the period.

Operation-wise wage differentials between the villages were found very high, and observed a widening pattern till 1975-76. There after, wage differentials declined. In general, wage variations based on operations between the villages expanded over a decade period. Results drawn from the variance analysis suggest that operation-wise wage differentials were statistically highly significant right from 1968-69 to 78-79. Operations do cause significant wage fluctuations. Wages fluctuate not only because of months and seasons, but because of operations also.