

CHAPTER IV

Real Wage Rates And Productivity in Agriculture

There is a wide spread feeling that productivity in agriculture has increased considerably, but real wage rates in agriculture have remained constant¹ and agricultural labourers have not received their due share from the enhanced benefits in agriculture.² Contrary to this view, there is another view that agricultural growth rate did lead to rises in agricultural real wage rates in India at least during the recent past.³ Both, money and real wage rates, were found to be higher in the regions where H.Y.V., specially of wheat, had been adopted widely than in the regions where the H.Y.V. was not adopted.⁴

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1. Krishnaji, N; Op.Cit;
 2. (a) Frankel, F.R., "Economic Gains & Political Cost", O.U.P. Bombay, 1971, P.197.
 (b) Gommen, T.K., "Green Revolution and Agrarian Conflict", Economic and Political Weekly, June 26, 1971.
 (c) Bardhan, P.K., Op.Cit;
 (d) Jose, A.V., Op.Cit;
 (e) Gough, G.W., Op.Cit;
 3. Deepak Lal, "Agricultural Growth, Real Wages and Rural Poor in India", Economic and Political Weekly, June 26, 1976, PP.A47-60.
 4. Herdt and Baker; Op.Cit;

In view of the above observations, it is proposed, in this chapter, to examine the relative movements of real wage rates and productivity in agriculture in Rajasthan over the period 1967-68 to 1973-79.

Methodology of the construction of indices of agricultural real wage rates and those of agricultural productivity are discussed in the first section. The second section deals with the examination of relationship between agricultural wage rate and productivity at district levels. The third section examines and analyses the relationship between operation-wise wage rates and agricultural production. Last section concludes the findings.

4.1 The question whether relative share of labour in the increased agricultural productivity has increased, remained constant, or decreased would have been examined, had we been able to get data pertaining to total wage bill, total cost of production per hectare of land and other relevant informations. Since requisite data are not available, we confine our analysis only to the examination of relative movements between real wage rates and productivity. To measure the relative movements and to determine the relationship between wage rates and productivity in agriculture, we need indices of wages and productivity. To construct indices

of agricultural productivity, 19 major crops* are included for which the data on production, area and farm harvest prices are available at district level. These 19 crops cover around 80 percent of the total cropped area in the State. Productivity per hectare of land in agriculture is worked out at 1967-68 constant Farm Harvest Prices for a period of 12 years from 1967-68 to 1978-79. Then productivity indices are constructed with base 1967-68 = 100. Table 4.1 presents the indices of total production; and table 4.2 presents those of productivity.

Construction of real wage indices requires a price deflator. Consumers General Price Index Numbers for Agricultural labourers in Rajasthan (A.C.P.I.)⁵ is available at State rather than district levels. One has to rely upon a common price deflator to get real wages at district levels, though real wages arrived at by common deflator, may not reflect price variations among the districts precisely. This will be a limitation of our analysis.

* Nineteen major crops are : bajra, jowar, maize, rice, wheat, barley, gram, tur, sesamum, rape and mustard, linseed, ground nut, castor seed, sugar cane, chillies, potatoes, cotton, sanhemp and tobacco.

5. It is issued by the Labour Bureau, Government of India. Simla A.C.P.I. is its abbreviated term used by the Bureau.

TABLE 4.1

Indices of Total Agricultural Production by Districts and Years

Districts	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Ajmer	100	65	60	145	108	48	107	93	138	136	134	132
Banmer	100	9	7	233	123	63	203	20	148	102	94	112
Bharatpur	100	85	100	165	106	146	65	138	113	111	117	136
Bhilwara	100	76	74	124	111	86	100	111	128	114	140	140
Bikaner	100	00	22	139	72	9	162	50	193	194	178	193
Chittor	100	67	82	130	106	96	97	131	128	98	119	145
Churu	100	21	74	129	110	45	182	32	142	93	113	95
Dungarpur	100	52	45	96	114	47	73	53	102	126	161	132
Ganganagar	100	48	76	114	106	121	126	109	163	138	179	207
Jaipur	100	73	77	125	102	93	83	104	109	123	115	140
Jalore	100	26	30	212	78	87	127	71	89	68	77	109
Jhalawar	100	73	89	100	94	98	101	113	109	110	103	127
Jodhpur	100	24	30	245	125	33	151	34	147	101	129	114
Kota	100	103	115	138	160	148	150	166	160	140	156	179
Nagar	100	39	52	123	105	63	125	80	135	124	116	114
Sawai-Madhopur	100	83	105	159	123	117	116	117	135	160	145	157
Sikar	100	41	79	93	68	50	81	64	84	78	66	89
Sirohi	100	52	47	199	111	80	133	80	143	105	108	127
Tonk	100	58	69	113	99	55	81	101	104	114	93	114
Udaipur	100	59	64	116	118	59	89	97	117	105	133	130

Source : Based on the Farm Harvest Prices data and production figures of 19 major crops compiled from the office records of the Directorate of Economics & Statistics, Rajasthan, Jaipur.

Note 1. : Worked out at 1967-69 constant Farm Harvest Prices. In case F.H.P. was not collected or rejected by the State Govt. for a crop in a District, State F.H.P. was used.

TABLE 4.2

Indices of Agricultural Productivity in Rajasthan by Districts & Years

Districts	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
Ajmer	100	72	63	133	104	58	100	90	133	131	131	133	138
Barnmer	100	9	15	225	105	48	153	22	183	121	121	93	103
Bharatpur	100	99	101	173	103	147	89	135	125	123	123	135	141
Bhilwara	100	77	74	104	99	90	85	105	123	108	108	141	134
Bikaner	100	neg	30	158	64	10	141	54	276	289	192	151	151
Chittor	100	63	80	122	96	97	97	118	116	88	122	122	136
Churu	100	24	74	139	105	44	169	36	164	130	110	110	94
Dungarpur	100	56	48	87	104	52	66	54	96	115	146	146	121
Ganganagar	100	67	93	120	115	121	119	132	155	129	158	158	169
Jaipur	100	75	75	114	91	91	75	95	108	121	114	114	132
Jalore	100	28	32	162	79	77	97	85	107	88	92	92	112
Jhalawar	100	74	88	99	89	96	94	108	107	110	105	105	120
Jodhpur	100	25	31	218	104	30	117	34	167	128	130	130	101
Kota	100	93	97	127	150	135	132	148	155	134	166	166	168
Nagaur	100	42	53	115	99	63	113	87	143	135	118	118	113
Sawai-Madhopur	100	96	108	153	122	120	108	119	135	157	147	147	148
Sikar	100	43	77	91	65	51	75	59	90	94	79	79	97
Sirchi	100	58	55	186	107	82	111	106	134	117	116	116	139
Tonk	100	64	71	115	90	74	85	103	110	120	102	102	121
Udaipur	100	62	72	101	109	68	72	89	108	96	125	125	116

Source : Based on production and area figures of 19 major crops compiled from the office records of the Directorate of Economics & Statistics Rajasthan, Jaipur.

- Note : 1. Agricultural Productivity per hectare of land is worked out at 1967-68 constant Farm Harvest Prices.
2. In case F.H.P. was not collected or rejected by The State Govt. for any crop in the district, State F.H.P. was used.

Consumers Price Index Numbers for Agricultural labourers in Rajasthan have base 1960-61 = 100. We have constructed indices of agricultural productivity and those of total agricultural production with 1967-68 Farm Harvest Prices. Hence, we are required to shift the base of the price deflator from 1960-61 to 1967-68. So that both the indices have a common and comparable base year. In view of this, new series of Price deflator with 1967-68=100 is constructed by setting 1967-68 Price Index Number of the old series equal to 100. These price indices are presented below in a tabular form.

TABLE 4.3

Consumers General Prices Index Numbers
for Agricultural Labourers in Rajasthan*

(Base 1960-61 = 100)					
1967-68	68-69	69-70	70-71	71-72	72-73
173	182	196	173	176	228
73-74	74-75	75-76	76-77	77-78	78-79
284	369	292	278	326	317

New Series of Consumers General Prices Index
Numbers for Agricultural Labourers in Rajasthan

(Base 1967-68=100)

1967-68	68-69	69-70	70-71	71-72	72-73
100	105	113	100	102	132

73-74	74-75	75-76	76-77	77-78	78-79
164	213	169	161	188	193

* It is issued by the Labour Bureau, Govt. of India, Simla

Wage series of some of the wage reporting villages are discontinued due to their replacement by new villages. We have excluded six districts in which one or both of the wage reporting villages have undergone a change. District annual wage rates are arrived at by simple averaging of annual wage rates of both the wage reporting villages of a district. Real wage indices of remaining 20 districts are constructed to study relative movements and to establish relationships between wage rates and productivity per hectare in agriculture (see table 4.4).

4.2 Indices of production, productivity and real wage rates, presented in tables 4.1, 4.2, and 4.4 respectively, are plotted on graphs IV.1 to IV.6. The examination of these

TABLE 4.4

Indices of Real Wage Rates in Agriculture : by Districts and Years

District	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			
Ajmer	100	108	95	103	116	87	81	73	153	180	154	168			
Barnar	100	139	96	142	110	88	114	143	249	113	97	199			
Bharatpur	100	73	71	79	76	61	62	52	86	84	75	95			
Bhilwara	100	136	128	149	138	105	95	135	275	299	162	172			
Bikaner	100	95	108	100	65	97	72	68	101	158	140	109			
Chittor	100	104	87	96	101	85	86	84	190	163	155	152			
Churu	100	116	129	162	160	105	113	100	144	165	104	114			
Dungarpur	100	123	146	156	152	123	131	114	171	213	213	219			
Ganganagar	100	101	88	105	140	119	112	94	143	155	130	149			
Jaipur	100	115	124	150	170	144	127	101	146	208	214	197			
Jalore	100	109	65	89	91	75	68	72	102	116	98	124			
Jhalawar	100	107	89	101	100	82	73	58	96	122	120	109			
Jodhpur	100	101	61	102	99	99	109	97	103	125	120	146			
Kota	100	88	84	100	100	87	73	60	107	127	104	114			
Nagaur	100	107	89	102	95	75	65	50	133	150	112	129			
Sawai Madhopur	100	102	95	100	112	89	90	73	115	162	145	149			
Sikar	100	123	100	115	116	92	76	58	119	121	125	174			
Sirohi	100	96	95	106	103	107	103	89	127	132	120	128			
Tonk	100	78	84	95	106	94	63	67	116	137	129	141			
Udaipur	100	100	86	137	137	119	106	104	161	152	130	137			

Source : Table 2.1

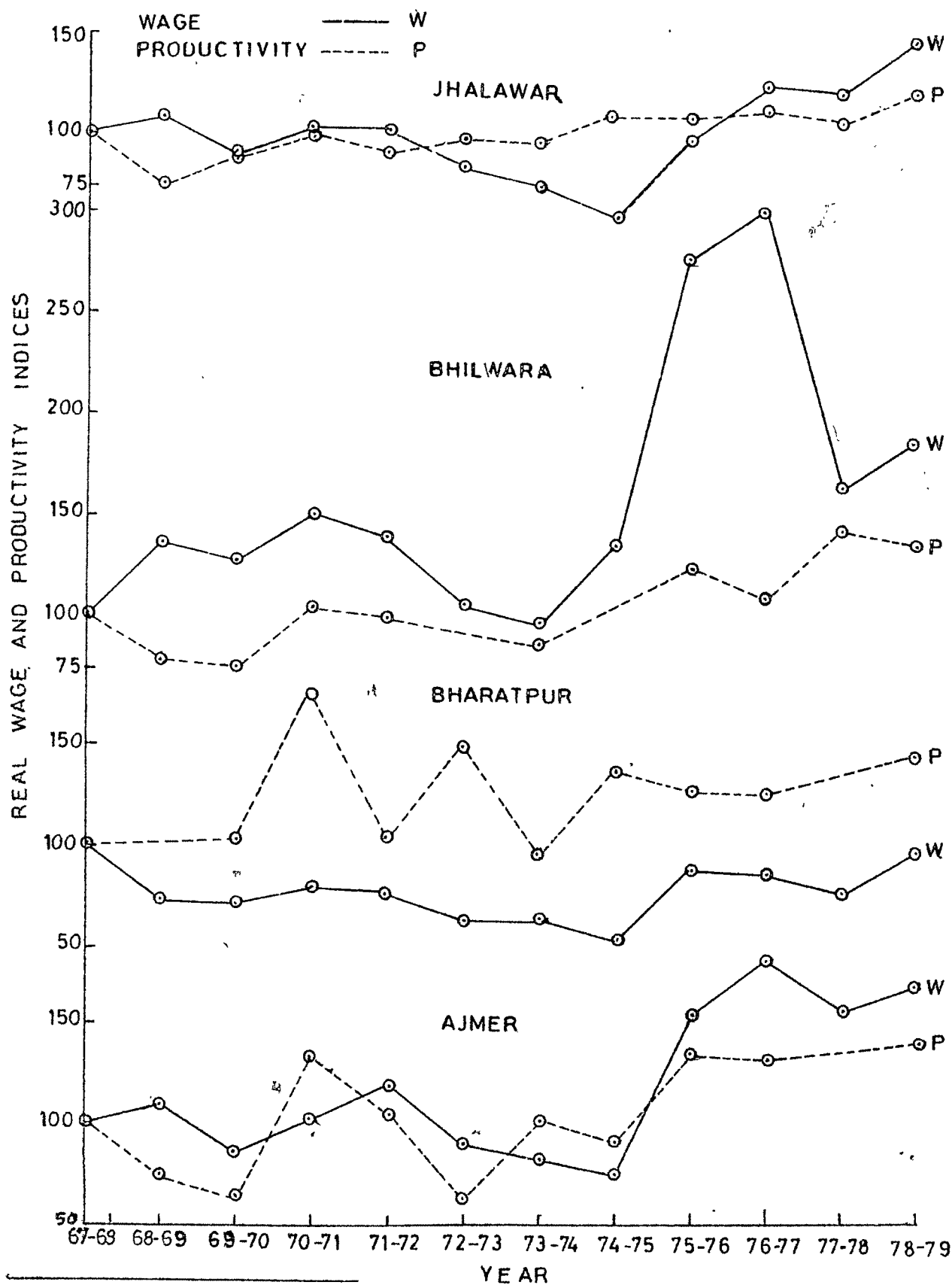
Note : District money wage rates are worked out by simple averaging of wage rates of both the villages in the distt. District money wage rates are deflated by new series of Price Index Numbers presented in table 4.3

graphs and the tables brings out the following features:

- (i) Fluctuations in productivity and in real wage rates are, by and large, in similar directions in almost all the districts. Both follow the same over all pattern.
- (ii) Fluctuations in productivity are steeper than those in real wage rates. This is but natural in the sense that productivity very much depends on climatic factors which vary vastly from year to year, particularly in a State like Rajasthan. Wage rates on the other hand, depend on certain limits set by past wage rates, subsistence conditions and available alternative job opportunities; and they vary within a narrow range.
- (iii) Productivity and wage rates have shown an upward tendency over the period under study.
- (iv) Steep fluctuations in productivity and in real wage rates are seen in desert and unirrigated regions like Bikaner, Barmer etc., while modest variations existed in fairly better irrigated regions like Chittor, Bhilwara, Ganganagar etc.

Simple correlation coefficients are also worked out between the indices of real wage rates and those of productivity to get statistical exactness in the relationships

GRAPH IV-1
RELATIVE MOVEMENTS OF REAL WAGES AND PRODUCTIVITY IN
AGRICULTURE IN RAJASTHAN : BY DISTRICT.
REFERENCE



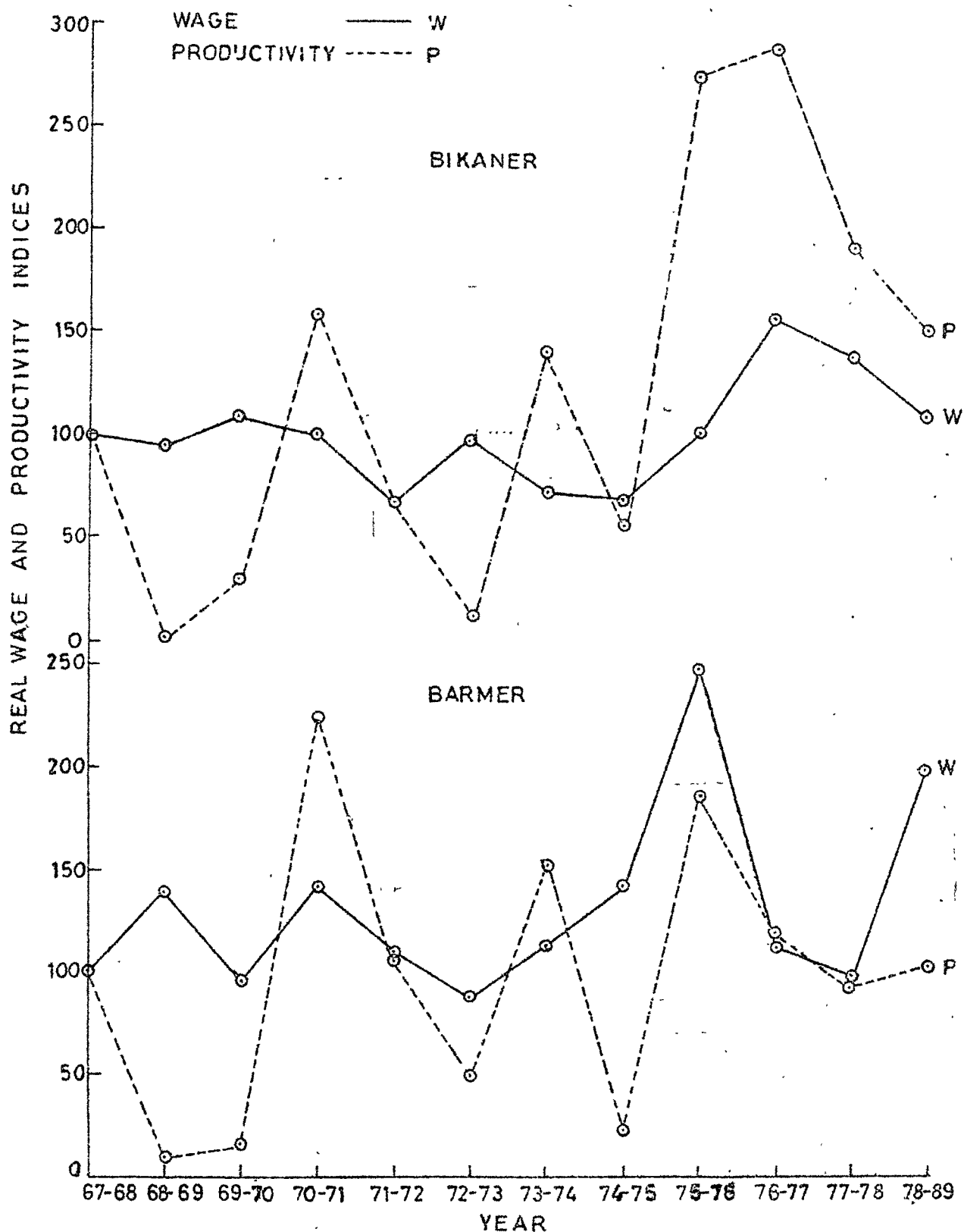
GRAPH IV-2

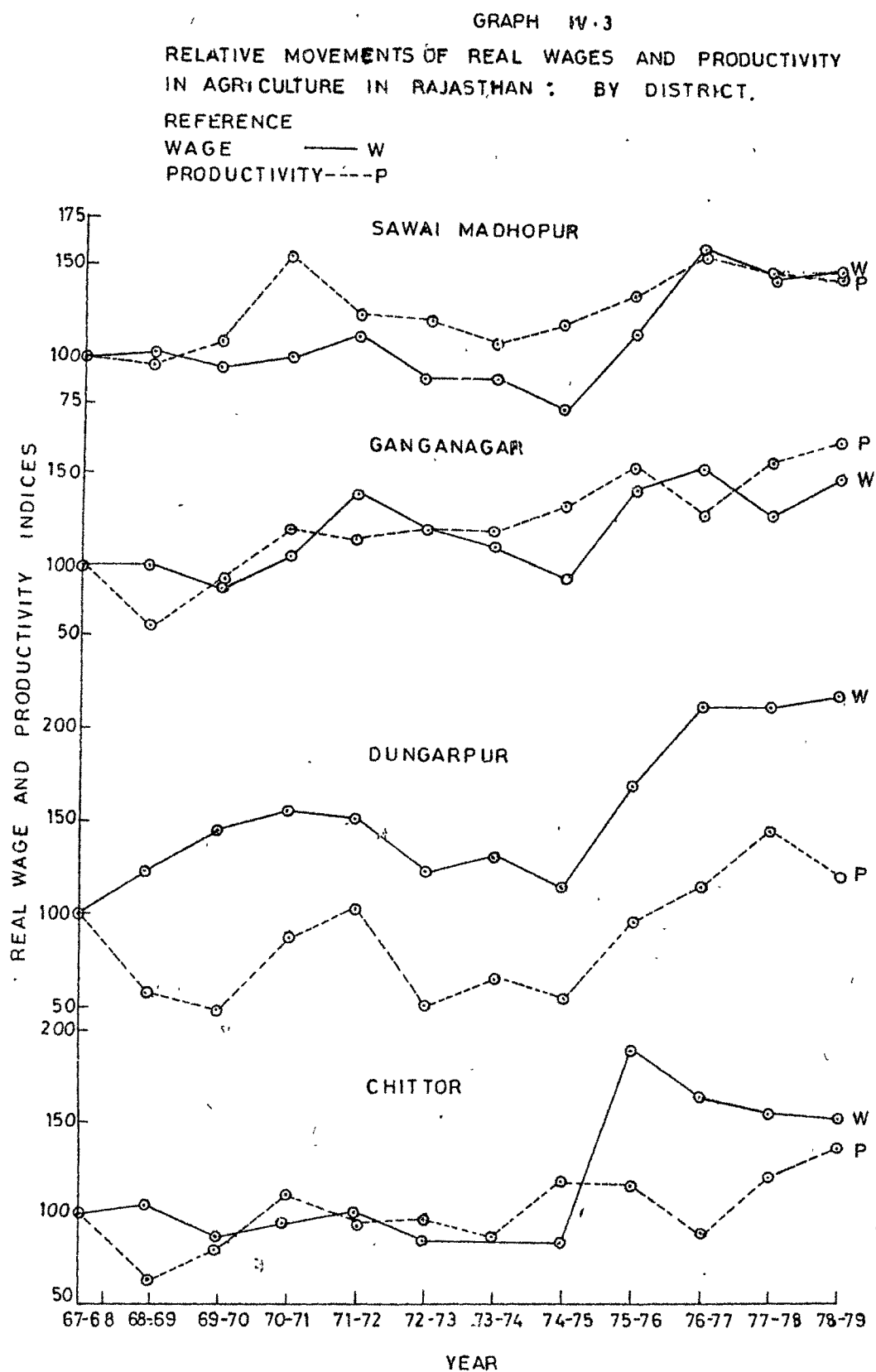
RELATIVE MOVEMENTS OF REAL WAGES AND PRODUCTIVITY
IN AGRICULTURE IN RAJASTHAN : BY DISTRICTS.

REFERENCE:

WAGE ——— W

PRODUCTIVITY - - - - P





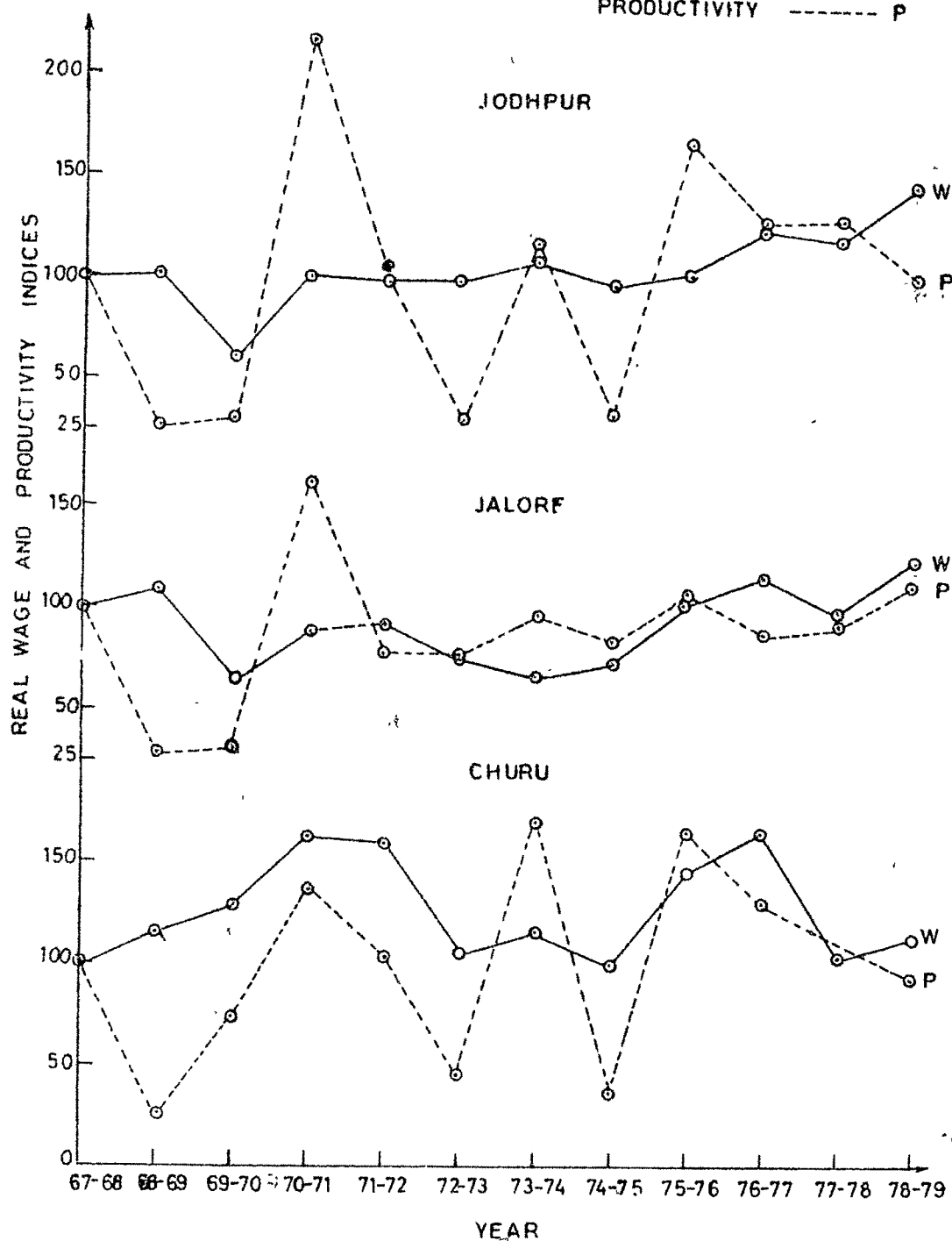
GRAPH IV. 4

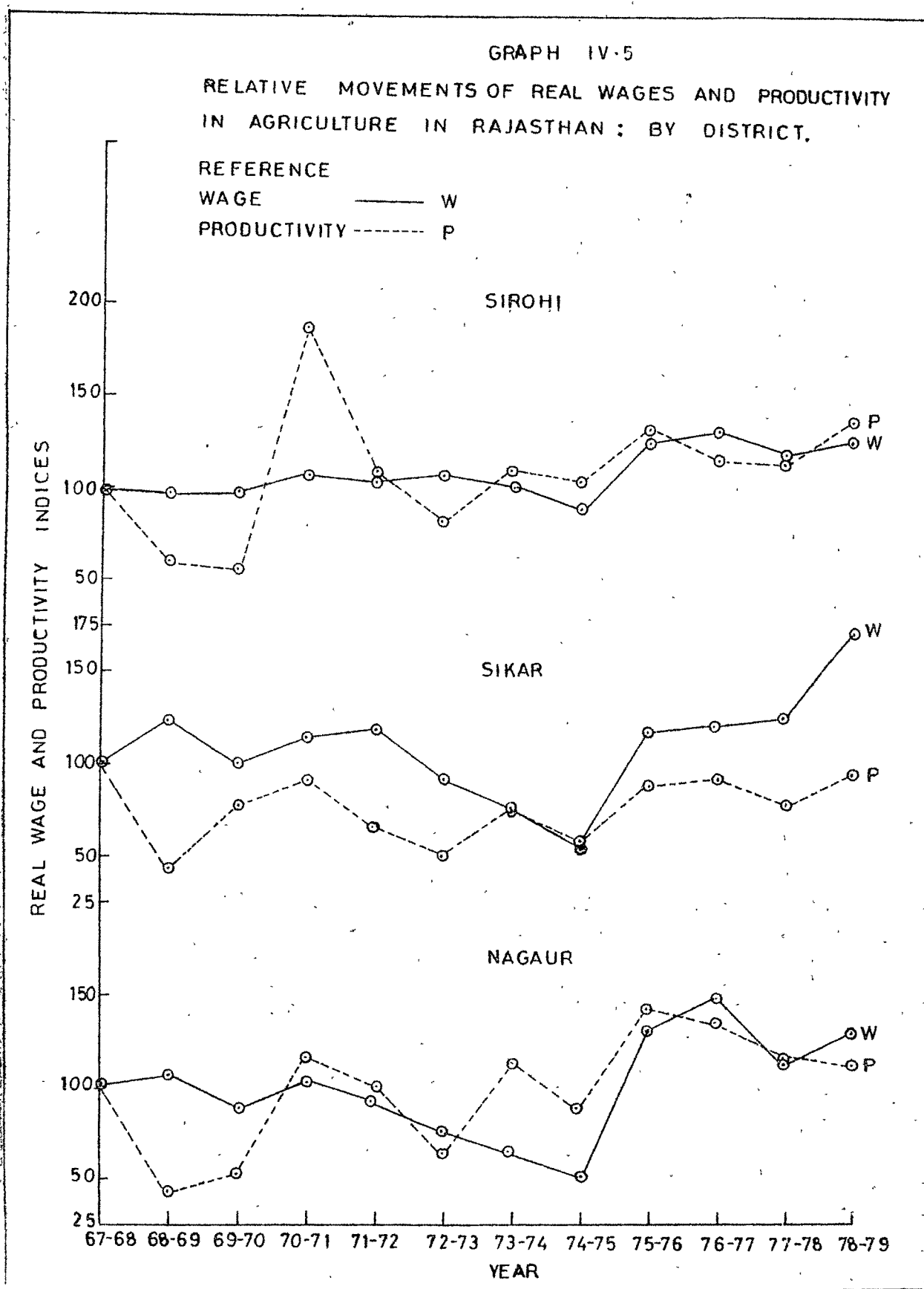
RELATIVE MOVEMENTS OF REAL WAGES AND PRODUCTIVITY
IN AGRICULTURE IN RAJASTHAN : BY DISTRICTS.

REFERENCE :

WAGE ——— W

PRODUCTIVITY - - - - P





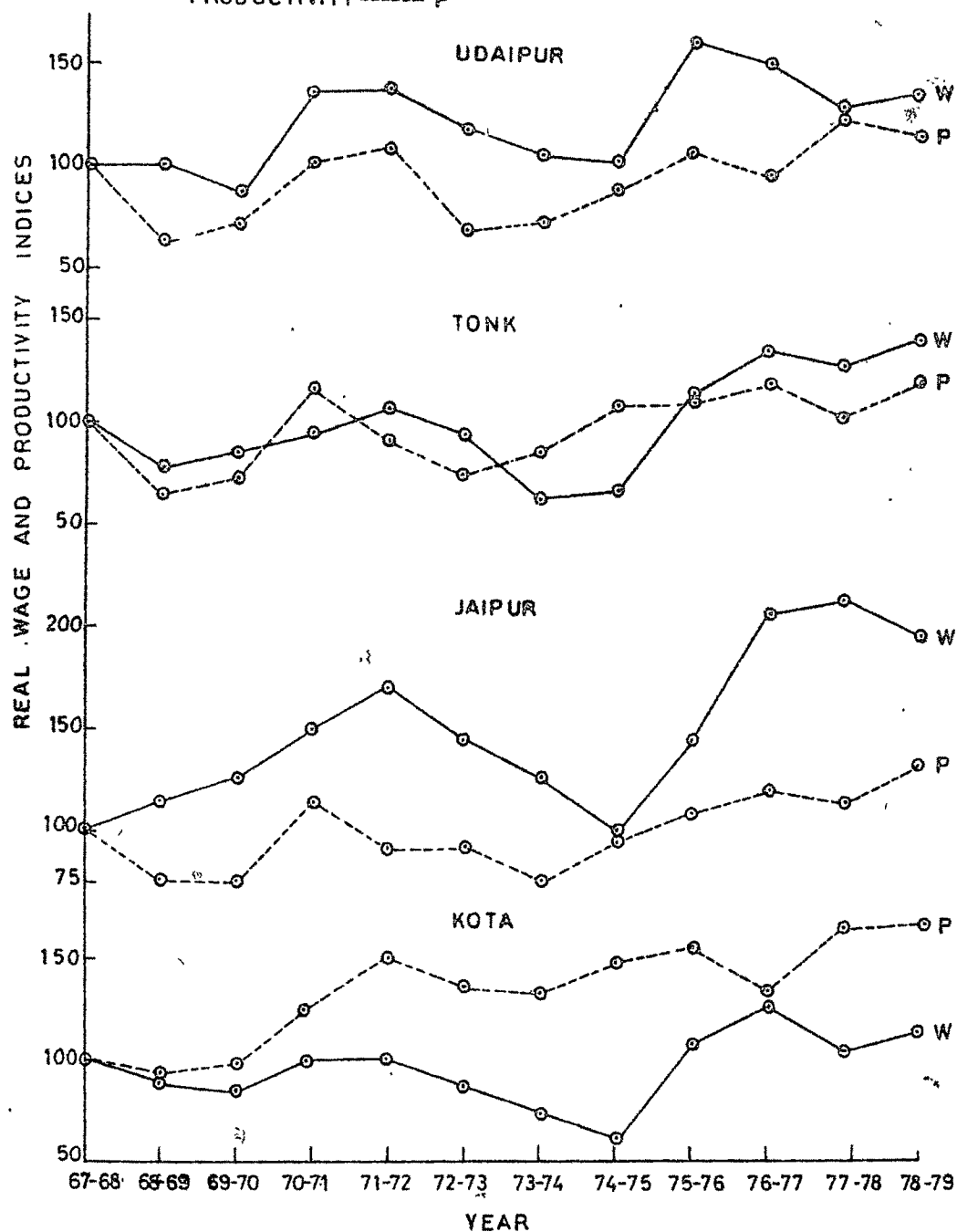
GRAPH IV.6

RELATIVE MOVEMENTS OF REAL WAGES AND PRODUCTIVITY
IN AGRICULTURE IN RAJASTHAN : BY DISTRICT.

REFERENCE

WAGE — W

PRODUCTIVITY - - - P



of relative movements between the two. Real wages and productivity have shown significant relationships in 9 out of 20 districts (see table 4.5). In another 7 districts, though the relationships are insignificant, yet not very poor. Only in one case wage rates are found to be inversely associated with productivity; and, that too, almost negligible. In 5 out of 9 significant cases, coefficients of correlation turned out to be highly significant at 1% and 2% levels of confidence.

The analysis suggests that, by and large, real wage rates increased when productivity increased; and, decreased when the latter decreased. Another fact emerging out from the above analysis is that the degree of significant relationship between wage rates and productivity seems to be directly associated with the degree of irrigation facilities. As such, in the regions like Ganganagar, Dungarpur, Ajmer etc. wages and productivity emerged to be significantly associated. Since productivity depends fully upon rainfalls in unirrigated regions, productivity showed severe fluctuations; and wages also varied more in these areas.

TABLE 4.5

Relationship between the Indices of Real Wages and those of Productivity per Hectare in Agriculture measured through the Coefficient of Correlation : 1967-68 to 1978-79.

	<u>District</u>	<u>Coefficient of Correlation</u>
1.	Ajmer	0.7510*
2.	Barmer	0.3894
3.	Bharatpur	-0.0107
4.	Bhilwara	0.4725
5.	Bikaner	0.5778***
6.	Chittor	0.3826
7.	Churu	0.4808
8.	Dungarpur	0.8021*
9.	Ganganagar	0.6567**
10.	Jaipur	0.6965**
11.	Jalore	0.1859
12.	Jhalawar	0.1138
13.	Jodhpur	0.3684
14.	Kota	0.2525
15.	Nagaur	0.5022****
16.	Sawai Madhopur	0.7006**
17.	Sikar	0.4000
18.	Sirohi	0.4746
19.	Tonk	0.6093***
20.	Udaipur	0.6442***

Source : Tables 4.1 and 4.3

*	: r value > 0.7079	is significant at 1 percent	) level of
**	: r value > 0.6581	" " " 2 "	) confidence
***	: r value > 0.5760	" " " 5 "	) with
****	: r value > 0.4973	" " " 10 "	) 10 d.f.

4.3 We would like to examine in this section, the movements in operation-wise wages, since wages for all the operations do not follow the same pattern. However, here we relate operation-wise wage rates with the movements in total production, so as to capture also the demand factor which is more significant over a shorter period of harvesting or sowing. Production as a whole is likely to reflect the total demand for labour, and also the improvements in productivity.

Annual wage rates by operations at district level are arrived at by simple averaging of monthly wage rates of a particular operation in both the wage reporting villages. Annual wage rates, arrived at through the above procedure, are presented in appendix table 4.1. Operation wise real wage indices along with production indices are presented in table 4.6. Districts of Barmer, Bikaner, and Sirahi have been excluded from the analysis, since their wage rates by operations have frequent breaks.

Simple correlation coefficients are worked out between the indices of operation wise wage rates and those of total production in agriculture. Table 4.7 indicates that indices of wage rates for various operations were positively associated with the indices of total production in almost all the districts. But, significant relationships are seen only in

TABLE 4.6

Indices of Agricultural Production and Operationwise
Real Wage Rates in Agriculture (Base 1970-71 = 100).

District	Opr.	1967 -68	68- 69	69- 70	70- 71	71- 72	72- 73	73- 74	74- 75	75- 76	76- 77	77- 78	78- 79
Ajmer	P	97	105	85	100	113	80	82	77	176	186	148	158
	S	57	96	92	100	95	74	95	71	162	176	139	146
	W	88	113	86	100	120	83	95	73	135	164	149	158
	I	-	-	83	100	108	78	76	63	140	159	137	144
	H	88	90	72	100	114	92	77	64	121	147	125	134
	Prod.	69	45	42	100	78	33	74	64	95	94	93	91
Bharatpur	P	-	89	95	100	98	79	79	63	119	141	125	162
	S	-	101	88	100	89	77	89	69	134	147	127	154
	W	116	100	102	100	109	83	89	76	83	112	85	83
	I	-	-	81	100	93	76	82	71	88	97	87	110
	H	140	100	89	100	90	77	80	69	107	89	74	104
	T	-	-	99	100	101	80	82	76	104	110	94	113
	Prod.	61	51	60	100	64	88	52	71	69	67	71	83
Bhilwara	P	69	80	74	100	90	63	56	44	210	234	92	95
	S	-	69	70	100	87	54	50	43	226	195	81	83
	W	51	89	86	100	82	62	62	54	87	123	108	139
	I	-	-	90	100	101	80	72	60	188	211	120	125
	H	74	93	89	100	98	76	67	52	94	127	113	116
	Prod.	81	61	59	100	89	69	80	89	103	92	113	113
Chittor	P	124	105	97	100	118	89	84	76	224	208	150	167
	S	87	116	86	100	103	84	86	76	262	236	144	118
	W	-	110	89	100	97	84	88	76	219	131	118	121
	I	-	-	86	100	117	89	86	75	154	158	141	146
	H	90	115	91	100	103	88	87	78	153	180	139	124
	T	-	-	98	100	101	82	81	78	224	110	118	121
	Prod.	77	52	63	100	82	74	75	100	99	75	91	112
Dungarpur	P	-	84	102	100	108	94	100	74	110	142	139	136
	S	-	88	84	100	105	85	91	70	105	132	125	131
	I	-	-	86	100	96	68	74	61	98	135	160	147
	H	66	79	106	100	99	79	70	73	92	142	149	152
	T	-	-	41	100	90	87	53	34	100	122	-	107
	W	-	75	100	100	86	72	54	46	97	116	169	138
	Prod.	104	54	46	100	119	49	76	55	106	131	167	137
Churu	P	-	111	74	100	105	71	71	77	97	101	50	70
	S	-	132	82	100	121	70	70	76	96	100	49	70
	W	-	105	78	100	101	67	76	69	110	128	57	89
	H	87	68	74	100	90	45	57	51	98	135	-	62
	Prod.	78	17	58	100	85	35	141	25	110	72	88	73

contd....

TABLE 4.6 Contd.

District	Opr.	1967 -68	68- 69	69- 70	70- 71	71- 72	72- 73	73- 74	74- 75	75- 76	76- 77	77- 78	78- 79
Ganga- nagar	P	-	96	86	100	132	115	106	88	140	147	125	143
	S	-	95	86	100	139	122	111	89	145	149	129	145
	W	-	96	81	100	128	111	104	93	121	141	125	145
	I	-	-	87	100	145	119	112	99	142	156	126	147
	H	-	95	82	100	135	109	107	86	128	152	135	139
	T	-	-	80	100	127	109	106	84	118	145	120	142
	Prod.	88	42	67	100	93	106	110	95	143	121	157	181
Jaipur	P	83	81	91	100	121	108	101	71	110	119	233	163
	S	-	83	112	100	116	110	108	78	114	115	227	166
	W	92	76	110	100	106	88	73	66	89	112	106	132
	I	-	-	76	100	122	93	78	65	95	136	118	128
	H	55	78	83	100	110	98	85	69	117	149	102	118
	T	-	-	-	-	-	-	-	-	-	-	-	-
	Prod.	80	58	61	100	81	74	66	83	87	98	92	113
Jalore	P	90	92	62	100	124	86	64	74	99	96	82	79
	S	126	135	86	100	144	111	77	118	141	136	117	118
	I	-	-	81	100	117	95	72	94	130	129	107	171
	H	117	113	84	100	100	94	81	96	141	140	116	189
	T	-	-	-	-	-	-	-	-	-	-	-	-
	T	-	-	-	-	-	-	-	-	-	-	-	-
	Prod.	47	13	14	100	37	41	60	33	42	32	37	52
Jh ^{la} Jhawar	P	97	91	87	100	99	102	70	55	93	114	114	111
	S	-	99	102	100	115	83	78	61	118	143	126	119
	W	123	99	99	100	90	96	73	64	77	139	143	118
	I	-	-	80	100	101	80	76	56	108	127	124	110
	H	90	109	106	100	98	81	73	55	114	115	111	106
	T	-	-	-	-	-	-	-	-	-	-	-	-
	Prod.	100	73	89	100	94	98	101	113	101	110	103	127
Kota	P	104	107	87	100	109	98	78	65	118	132	120	144
	S	-	95	81	100	98	88	75	60	116	124	114	118
	I	-	-	88	100	105	93	72	56	101	129	109	103
	H	98	88	83	100	94	90	74	61	107	119	98	100
	T	-	-	-	-	-	-	-	-	-	-	-	-
	T	-	-	-	-	-	-	-	-	-	-	-	-
	Prod.	73	75	84	100	116	108	109	120	116	102	113	130
Jodhpur	P	70	76	67	100	95	80	100	91	70	94	85	123
	S	75	81	50	100	95	85	105	59	74	109	92	131
	W	122	87	48	100	100	74	100	56	121	155	131	147
	I	-	-	68	100	107	75	123	73	125	145	134	180
	H	-	-	57	100	99	67	86	65	108	117	118	158
	T	-	-	71	100	118	80	95	84	118	171	121	153
	Prod.	41	10	12	100	51	13	62	14	60	41	53	47
Nagaur	P	100	102	110	100	95	72	61	46	131	153	99	111
	S	-	85	97	100	87	78	69	47	124	139	73	109
	W	121	105	83	100	98	78	65	52	150	182	135	138
	I	-	-	88	100	100	82	68	53	148	144	121	122
	H	100	109	82	100	94	82	65	53	88	84	136	140
	T	-	-	-	-	-	-	-	-	-	-	-	-
	Prod.	81	32	42	100	85	52	101	65	109	101	95	93

contd....

TABLE 4.6 (Concl'd.)

District	Opr.	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Sawai-Madhopur	P	-	110	81	100	108	81	81	67	94	128	121	136
	S	-	108	80	100	114	79	83	59	93	135	130	138
	W	77	68	74	100	84	58	74	61	88	174	149	121
	I	-	-	83	100	94	71	62	60	82	139	138	136
	H	121	88	103	100	109	85	85	69	122	165	156	158
	T	-	-	74	100	128	102	91	81	110	242	255	163
	Prod.	63	52	66	100	77	74	73	84	101	91	98	
Sikar	P	83	94	77	100	99	85	62	53	99	99	84	138
	S	-	111	65	100	107	83	61	55	100	106	85	143
	I	-	-	69	100	103	82	71	48	105	107	91	145
	H	84	100	83	100	99	80	64	55	98	99	-	136
	Prod.	108	44	85	100	68	54	87	69	91	84	71	96
Tonk	P	-	116	106	100	120	101	63	63	100	115	104	129
	S	-	103	112	100	127	111	65	64	102	120	113	143
	W	-	63	75	100	117	121	61	67	127	148	152	169
	I	-	-	63	100	101	102	56	60	112	130	125	123
	H	104	86	84	100	108	113	68	66	128	143	147	140
	Prod.	88	52	61	100	88	49	72	89	92	101	82	101
Udaipur	P	53	52	44	100	98	83	74	75	96	79	67	74
	S	96	79	74	100	115	89	88	107	152	130	111	123
	W	72	88	69	100	76	73	74	64	115	121	103	106
	I	-	-	82	100	125	92	97	108	141	148	127	130
	H	65	70	62	100	96	65	66	58	129	108	92	99
	T	-	-	99	100	163	126	115	104	197	207	177	182
	Prod.	86	51	55	100	102	51	77	84	101	91	115	112

Source : 1) Production indices ^{are} based on Farm Harvest Prices and Production data of 19 major crops compiled from the office records of the Directorate of Economics and Statistics, Rajasthan, Jaipur.

2) Wage indices are based on Appendix Table 4.1.

Note : 1) Production indices are worked out at 1967-68 constant, F.H.C.

2) Operationwise annual money wage rates at district level are deflated by the new series of Price Index Numbers presented in Table 4.3, F.H.C.

3) P = Ploughing; S=Sowing; W=Weeding, I=Irrigation and allied activities; H=Harvesting; T=Transplanting and Prod.= total Production. Opr. = Operation

TABLE 4.7

Coefficient of Correlation between the Indices of
Operation-wise real wage rates and those of total
Production in Agriculture : 1967-68 to 1978-79.

Operation District	Plough- ing	Sowing	Weed- ing	Irriga- tion and allied activities	Reaping and Harvest- ing	Trans- plant- ing
Ajmer	0.6895*	0.6686*	0.6592*	0.7140*	0.7505*	
Bharatpur	0.2039 ¹	0.1004 ¹	-0.2319 ¹	0.2873	0.1063 ¹	0.1096 ²
Bhilwara	0.3725	0.3517 ²	0.5416*	0.4260	0.4693	
Chittor	0.3112	0.1690	0.3373 ²	0.5435	0.1351	0.3662 ²
Churu	-0.1070 ¹	-0.2070 ¹	0.1079 ¹		0.0403 ³	
Dungarpur	0.8701* ¹	0.9120 ¹	0.8137 ¹	0.9135*	0.8161 ¹	0.7968 ⁴
Ganganagar	0.7263 ¹	0.7233 ¹	0.7566 ¹	0.6532*	0.7012 ¹	0.6570 ²
Jaipur	0.5036*	0.3719 ²	0.6065*	0.7061*	0.8665*	
Jalore	0.1291	-0.2984		0.0200	0.0276	
Jhalawar	0.1570	0.1121 ²	0.1615	0.1881	-0.1837	
Jodhpur	0.4161	0.5112*	0.4687	0.4226	0.4995 ²	0.2972 ²
Kota	0.1938	0.1792 ²		-0.0884	-0.0557	
Megaur	0.2912	0.4155 ²	0.4898	0.5541*	0.1445	
Sawai Madhopur	0.5275 ¹	0.5662 ¹	0.7635*	0.8081*	0.5427*	0.6656 ²
Sikar	0.2188	0.3765 ²		0.4519	0.0266 ²	
Tonk	0.1101 ¹	0.1862 ¹	0.5129 ¹	0.4580	0.4259 ¹	
Udaipur	0.4924	0.7367*	0.5541*	0.7328*	0.6804*	0.5919 ²

Source : Table 4.6

Notes : 1 based on 11 years wage data.
 2 based on 10 years wage data.
 3 based on 9 years wage data.
 4 based on 8 years wage data.

* r value is significant at 1 percent level with n-2 d.f.

** r value is significant at 2 percent level with n-2 d.f.

*** r value is significant at 5 percent level with n-2 d.f.

**** r value is significant at 10 percent level with n-2 d.f.

fairly better irrigated districts. This means, in intensively irrigated regions, wages increased when production increased; and if production increased steeply, wages too increased steeply.

One specific fact that the table 4.7 reveals is that where irrigation facilities were better, wages for all the operations were found significantly associated with the production. This suggests that in general, the impact of production on the wage rates of various operations remained uniform. But to some extent, harvesting wage rates would have been influenced more by production, since wage rates for harvesting had shown highly ^{significant} relationships at 1% and 2% levels of confidence in five districts.

4.4 Conclusions

To sum up, movements of real wage rates and those of productivity per hectare in agriculture were found to be directly associated with each other in 19 out of 20 districts of Rajasthan during the period 1967-68 to 1978-79, but the movements were seen statistically significant only in 9 districts. Real wages have invariably increased/decreased, when productivity has increased/decreased.

Significant movements between wages and productivity existed in fairly better irrigated areas; while, insignificant in most of the rain-fed and desert areas.

Fluctuations in productivity were seen steeper than those in wage rates. Further, fluctuations in productivity and in real wages are seen steep in rain-fed districts; while, smooth in highly irrigated districts.

Not only agricultural wage rate as a whole, has shown direct relationship with the productivity, but wage rates for individual operations have also shown direct relationship.

Total production in agriculture has influenced wage rates for various operations positively and uniformly. But to some extent, harvesting wage rates would have been affected more significantly.

The analysis suggests that productivity and real wage rates had a rising tendency over the period. Real wage rates for labourers in agriculture have improved invariably over the past decade, specially during the recent years.

APPENDIX TABLE 4.1

Annual Money Wage Rates by Operations at
District Level: 1967-68 to 78-79

District	Opr.	1967- 68	68- 69	69- 70	70- 71	71- 72	72- 73	73- 74	74- 75	75- 76	76- 77	77- 78	78- 79
Ajmer	P	2.25	2.56	2.23	2.32	2.66	2.44	3.14	3.79	6.89	6.94	6.47	6.71
	S	1.50	2.65	2.75	2.63	2.55	2.58	4.13	4.00	7.22	7.44	6.86	7.00
	W	1.67	2.25	1.71	1.90	2.33	2.09	2.95	2.93	4.33	5.00	5.33	5.50
	I	-	-	1.95	2.08	2.29	2.15	2.60	2.81	4.92	5.33	5.33	5.48
	H	1.87	2.00	1.73	2.12	2.46	2.00	2.68	2.87	4.33	5.00	5.00	5.22
Bharatpur	P	-	3.81	4.35	4.07	4.07	4.23	5.30	5.50	8.21	8.21	9.57	12.10
	S	-	3.97	3.73	3.73	3.40	3.80	5.43	5.50	8.44	8.86	8.92	10.57
	W	3.81	3.45	3.80	3.29	3.65	3.60	4.79	5.33	4.60	5.96	5.25	5.00
	I	-	-	3.67	3.66	3.49	3.68	4.93	5.56	5.46	5.73	6.00	7.33
	H	5.21	3.91	3.75	3.71	3.40	3.76	4.87	5.47	6.72	5.30	5.16	7.07
Bhilwada	P	-	-	3.78	3.40	3.50	3.60	4.57	5.50	6.00	6.00	6.00	7.00
	S	-	-	-	-	-	-	-	-	-	-	-	-
	W	2.00	2.41	2.42	2.88	2.64	2.40	2.64	2.72	10.21	10.83	5.00	5.00
	I	-	2.38	2.60	3.29	2.92	2.33	2.67	3.00	12.65	10.33	5.00	5.00
	H	1.25	2.30	2.40	2.46	2.06	2.00	2.50	2.83	3.60	4.86	5.00	6.25
Chittor	P	-	-	2.22	2.18	2.24	2.30	2.57	2.79	6.91	7.41	4.93	5.00
	S	1.75	2.31	2.38	2.36	2.36	2.38	2.60	2.59	3.75	4.83	5.00	5.00
	W	2.88	2.56	2.56	2.33	2.80	2.75	3.20	3.75	8.82	7.80	6.56	7.14
	I	2.00	2.80	2.25	2.31	2.44	2.58	3.25	3.75	10.21	8.78	6.25	5.00
	H	-	2.60	2.27	2.25	2.23	2.50	3.25	3.63	8.31	4.75	5.00	5.00
Churu	P	-	-	2.21	2.27	2.71	2.66	3.20	3.63	5.89	5.78	6.00	6.08
	S	2.00	2.64	2.27	2.21	2.33	2.57	3.17	3.67	5.72	6.39	5.77	5.00
	W	-	-	2.50	2.25	2.33	2.43	3.00	3.75	8.50	4.00	5.00	5.00
	I	-	-	-	-	-	-	-	-	-	-	-	-
	H	-	-	-	-	-	-	-	-	-	-	-	-
Dungarpur	P	-	5.00	3.60	4.29	4.60	4.00	5.00	7.00	7.00	7.00	4.00	5.50
	S	-	6.00	4.00	4.33	5.33	4.00	5.00	7.00	7.00	7.00	4.00	5.50
	W	-	3.75	3.00	3.40	3.50	3.00	4.25	5.00	6.33	7.00	3.67	5.50
	I	3.19	2.63	3.10	3.68	3.40	2.17	3.45	4.00	6.08	8.00	-	5.50
	H	-	-	-	-	-	-	-	-	-	-	-	-
Ganganagar	P	-	1.97	2.59	2.25	2.47	2.79	3.71	3.55	4.18	5.16	5.86	5.60
	S	-	2.15	2.21	2.33	2.50	2.63	3.50	3.45	4.13	4.96	5.48	5.60
	W	-	1.80	2.59	2.28	2.00	2.17	2.00	2.25	3.75	4.25	7.25	5.75
	I	-	-	2.34	2.41	2.36	2.15	2.94	3.14	4.00	5.25	7.25	6.50
	H	1.50	1.91	2.73	2.29	2.31	2.38	2.62	3.57	3.56	5.25	6.42	6.35
Ganganagar	P	-	-	1.00	2.17	2.00	2.50	1.88	1.67	3.67	4.25	-	4.25
	S	-	4.97	4.79	4.95	6.68	7.54	8.63	9.29	11.75	11.73	11.63	13.0
	W	-	4.88	4.78	4.91	6.97	7.88	8.96	9.36	12.0	11.8	11.86	13.0
	I	-	4.92	4.50	4.90	6.40	7.17	8.38	9.67	10.0	11.14	11.50	13.0
	H	-	-	4.75	4.83	7.13	7.57	8.87	10.14	11.63	12.75	11.43	13.0
Ganganagar	P	-	5.10	4.75	5.10	7.05	7.36	8.95	9.30	11.0	12.45	13.0	13.0
	S	-	-	4.50	5.00	6.50	7.21	8.73	8.90	10.0	11.7	11.35	13.0
	W	-	-	-	-	-	-	-	-	-	-	-	-
	I	-	-	-	-	-	-	-	-	-	-	-	-
	H	-	-	-	-	-	-	-	-	-	-	-	-

contd....

APPENDIX TABLE 4.1 (contd.)

District	Opr.	1967-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76	76-77	77-78	78-79
Jaipur	P	2.88	2.94	3.55	3.45	4.25	4.92	5.71	5.25	6.38	6.63	15.14	10.31
	S	-	2.95	4.29	3.39	4.00	4.92	6.00	5.60	6.50	6.29	14.50	10.33
	W	2.75	2.38	3.73	3.00	3.25	3.50	3.60	4.20	4.50	5.43	6.00	7.25
	I	-	-	2.76	3.20	3.98	3.92	4.08	4.46	5.15	7.02	7.09	7.52
	H	1.71	2.57	2.94	3.13	3.50	4.06	4.38	4.57	6.18	7.49	6.00	6.78
Jalore	P	3.09	3.31	2.40	3.44	4.35	3.93	3.63	5.46	5.75	5.29	5.29	5.00
	S	3.00	3.38	2.33	2.39	3.50	3.50	3.00	6.00	5.70	5.21	5.25	5.17
	I	-	-	2.50	2.72	3.23	3.42	3.22	5.44	5.96	5.64	5.48	8.50
	H	2.86	2.91	2.33	2.45	2.51	3.04	3.76	5.00	5.83	5.50	5.34	8.50
Jhalawar	P	2.45	2.43	2.47	2.53	2.55	3.41	2.92	2.95	3.97	4.64	5.42	5.14
	S	-	2.25	2.50	2.17	2.55	2.38	2.78	2.83	4.31	5.00	5.14	4.73
	W	2.36	2.02	2.17	1.94	1.78	2.46	2.31	2.64	3.20	4.35	5.20	4.18
	I	-	-	1.99	2.21	2.27	2.32	2.75	2.65	4.02	4.50	5.13	4.46
	H	2.23	2.83	2.67	2.48	2.47	2.66	2.95	2.91	4.76	4.61	5.18	4.80
Jodhpur	P	2.96	3.38	3.21	4.25	4.13	4.47	7.00	8.25	5.00	6.42	6.82	9.56
	S	3.00	3.38	2.25	4.00	3.88	4.50	6.86	5.00	5.00	7.00	6.88	9.56
	W	3.00	2.25	1.33	2.45	2.50	2.40	4.00	2.92	5.00	6.10	6.06	6.57
	I	-	-	2.11	2.73	2.97	2.70	5.54	4.25	5.75	6.38	6.90	8.98
	H	3.23	-	1.94	3.00	3.03	2.64	4.21	4.13	5.50	5.67	6.63	8.69
	T	-	-	2.00	2.50	3.00	2.63	3.89	4.50	5.00	6.88	5.70	7.00
Kota	P	3.00	3.26	2.85	2.89	3.22	3.75	3.67	4.00	5.78	6.14	6.50	7.60
	S	-	3.00	2.75	3.00	3.00	3.50	3.71	3.86	5.86	6.00	6.45	6.50
	I	-	-	3.00	3.00	3.20	3.67	3.55	3.59	5.13	6.22	6.13	5.67
	H	3.03	2.86	2.88	3.08	2.95	3.64	3.76	3.98	5.33	5.93	5.65	5.62
Nagaur	P	3.75	4.01	4.67	3.75	3.63	3.57	3.73	3.67	8.33	9.25	7.00	7.60
	S	-	3.69	4.56	4.15	3.70	4.25	4.71	4.17	8.67	9.25	5.67	8.25
	W	3.63	3.22	2.81	3.00	3.00	3.08	3.21	3.33	7.60	8.79	7.60	7.57
	I	-	-	2.97	3.00	3.05	3.25	3.34	3.40	7.50	6.96	6.80	6.71
	H	3.13	3.58	2.89	3.14	3.00	3.38	3.33	3.56	4.67	4.25	8.00	8.07
Sawai Madhopur	P	-	3.71	2.96	3.22	3.55	3.45	4.27	4.63	5.11	6.64	7.30	8.00
	S	-	3.40	2.72	3.00	3.50	3.14	4.06	3.75	4.71	6.50	7.33	7.60
	W	1.50	1.40	1.65	1.96	1.67	1.50	2.38	2.56	2.93	5.50	5.50	4.33
	I	-	-	2.90	3.09	2.98	2.88	3.13	3.95	4.29	6.91	8.00	7.70
	H	2.88	2.19	2.76	2.38	2.65	2.67	3.33	3.52	4.90	6.33	7.00	6.86
	T	-	-	1.40	1.67	2.17	2.25	2.50	2.90	3.10	6.50	8.00	5.00
Sikar	P	2.63	3.13	2.75	3.17	3.19	3.58	3.22	3.58	5.33	5.07	5.00	8.00
	S	-	3.67	2.29	3.14	3.42	3.44	3.17	3.67	5.33	5.36	5.00	8.20
	I	-	-	2.28	2.92	3.06	3.16	3.40	2.97	5.21	5.00	5.00	7.75
	H	2.63	3.30	2.94	3.14	3.18	3.30	3.29	3.67	5.20	5.00	-	7.80
Tonk	P	-	3.31	3.25	2.71	3.31	3.60	2.81	3.65	4.56	5.00	5.30	6.40
	S	-	2.81	3.29	2.60	3.36	3.81	2.75	3.56	4.50	5.00	5.50	6.80
	W	-	1.42	1.81	2.14	2.55	3.40	2.14	3.06	4.60	5.08	6.11	6.60
	I	-	-	1.78	2.52	2.60	3.40	2.29	3.20	4.78	5.27	5.93	5.79
	H	2.41	2.09	2.18	2.31	2.55	3.44	2.58	3.25	5.00	5.33	6.40	5.97

CONTD...

APPENDIX TABLE 4.1 (concl'd.)

District	Opr.	1967	68-	69-	70-	71-	72-	73-	74-	75-	76-	77-	78-
		68	69	70	71	72	73	74	75	76	77	78	79
Udaipur	P	2.10	2.14	1.95	3.94	3.94	4.30	4.75	6.27	6.40	5.00	5.00	5.36
	S	2.30	2.00	2.00	2.39	2.81	2.81	3.44	5.44	6.16	5.00	5.00	5.36
	W	1.85	2.38	2.00	2.58	2.00	2.50	3.13	3.50	5.00	5.00	5.00	5.00
	I	-	-	1.96	2.10	2.67	2.56	3.34	4.81	5.00	5.00	5.00	5.00
	H	1.88	2.13	2.01	2.88	2.82	2.46	3.10	3.56	5.59	5.00	5.00	5.22
	T	-	-	1.67	1.50	2.50	2.50	2.83	3.33	5.00	5.00	5.00	5.00

Source : Appendix Tables.

Note : 1) Worked out by simple averaging of operation-wise monthly wage rates of both the wage reporting villages.

2) P = Ploughing; S = Sowing; W = Weeding; I = Irrigation and allied activities; H = Harvesting and T = Transplanting

Opr. = Operations.