

AN ANALYSIS OF VARIATION IN THE WAGE RATES OF PERMANENT FARM SERVANTS ACROSS DIFFERENT ZONES OF HARYANA

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ABSTRACT

There are two types of hired labour used in Haryana Agriculture i.e. permanent farm servants and casual agricultural labourers. Casual agricultural labourers are generally hired on daily basis and permanent farm servants are employed on annual basis. The permanent farm servant is key component of agricultural hired labour in Haryana. However, there is almost no official data or information about wage rates and number of permanent farm servants unlike wage rates of casual agricultural labourers as we have structured information regarding wage rates of casual agricultural labourers. The main objective of our study is to analyse the variation in the wage rates of permanent farm servants across different zones of Haryana. In closed village labour market, permanent farm servants are employed by generally big farmers for one year from May to April. The analysis of wage rates of permanent farm servants is based on the primary data of 220 randomly selected permanent farm servants from twenty-two villages of Haryana. One village is randomly selected from each district.

Introduction:

Haryana is agriculturally developed state. The number of hired labourers had increased after Green Revolution. There are mainly two types of agricultural labourers in Haryana. First type is casual agricultural labourers which are generally hired on the daily basis and second type is permanent farm servants which are on yearly basis. In this paper, the variations in the wage rates of permanent farm servants across regions have been discussed. The socio-economic conditions, climatic conditions, level of irrigation and cropping pattern differ considerably across the regions of Haryana. The variations across regions in cropping pattern, agro-climatic conditions, mechanization, level of irrigation, etc. are likely to affect the wage rates of permanent farm servants. Further, the size of land holdings, cropping intensity, total cultivated area, proportion of Scheduled Castes, distance from the nearest town, etc. are also likely to impact the wage rates of

permanent farm servants across villages and within a village. In closed village labour market, permanent farm servants are hired by generally big farmers for one year from May to April. A farmer considers various personal traits of a permanent farm servant in mind while fixing his wage rate. Similarly, a permanent farm servant is familiar with nature of work to be performed on farms and knows the behaviour of farmer. Therefore, personal and farm traits play important place in the determination of wage rates of permanent farm servants. There may be huge variation in the wage rates among permanent farm servants and even in the same village due to differences in their personal as well as farm traits. So, the main objective of this study to enquire that whether there is any variation in the wage rates of permanent farm servants across different zones of Haryana.

This paper is organised as follows: firstly, the profile of surveyed villages has been described in terms of average size of land holdings, working population, level of irrigation, etc. After that, the variations in the wage rates of permanent farm servants across different regions have been described and discussed. Haryana has been divided into two types of zones i.e. Agro-Climatic Zones and Cropping Zones. Agro-climatic zones are formed on basis of agro climatic conditions of different zones and cropping zones are based on cropping pattern.

The Data

The information on the number of permanent farm servants in Haryana is not available as such. So, the study mainly relies on primary data which were collected through field survey. The primary data were collected at two stages. Firstly, the complete census of agricultural labour households in each selected village was conducted to capture the extent of permanent farm servants in a sample village. Secondly, the in-depth information was collected from the selected permanent farm servants. Here, uniformly one village was selected at random from each district. Further, from each village ten permanent farm servants were selected from the census listing of their households working on different farms. Thus, 220 permanent farm servants will be selected randomly for this primary survey in all over Haryana. This primary survey was carried out during 2021-22.

Section-1

Profile of the Sample Villages

In Haryana, there are 6841 villages (Census-2011). These villages differ from one another in terms of population size, cropping pattern, level of irrigation, workforce, etc. In this study, twenty-two randomly selected villages have been surveyed to get detailed information about the permanent farm servants and their wage rates.

(i) Village Size:

The area and population of a village are the two indicators of the village size. But the size of population is a more appropriate indicator of the size of a village. The size of agricultural labour market of a village is determined mainly by the size of population of the village. It is apparent from Table-1 that there is wide variation in the size of villages. The value of coefficient of variation (53.70 percent) indicates this. The largest population is in Mathana (7630 persons), whereas village Kot Kachhwa Khurd has the smallest population (894 persons). The population of the largest village (Mathana) is 8.53 times the population of the smallest village (Kot Kachhwa Khurd). In the sample of the twenty-two villages, there are six big villages with population more than 5000 and there are five small villages with population of less than 2000.

(ii) Caste and Occupational Structure:

The caste structure is indicated by the percentage of Scheduled Castes in the total population of the village. The three variables, i.e. percentage of male cultivators, percentage of male agricultural labourers and percentage of non-farm male labourers are good indicators of occupational structure of the village. It is clear from table-1 that there is substantial variation in the percentage of Scheduled Castes in the total population across the surveyed villages. Village Khera has the highest percentage (67.30 percent) of Scheduled Castes; while the lowest percentage of Scheduled Castes (12.07 percent) is found in village Peedal. The highest percentage of Scheduled Castes of the total population of the village is about 5.58 times more than the lowest percentage of Scheduled Castes. The percentage of Scheduled Castes in total population of Haryana as a whole is 20.17 as per census 2011. It is apparent from the table that there are fourteen villages which have higher percentage of Scheduled Castes than the overall percentage of SC population in Haryana and the remaining eight villages have smaller percentage of Scheduled Castes than the overall percentage in the state. The value of coefficient of variation is 49.90 percent, which indicates the degree of variation in the percentage of Scheduled Castes across the sample villages.

Similarly, the occupational structure also varies considerably across the sample villages. The percentage of male cultivators is the highest in village Siwana (68.38 percent); while it is the lowest in village Dadsia (11.74 percent). The ratio of the highest percentage to the lowest percentage is 5.82 and the value of coefficient of variation (CV) is also high (42.62 percent). These two indicate considerable variation across villages in the percentage of cultivators. On the same line, the percentage of male agricultural labourers also varies from the highest percentage in village Lambi (44.75 percent) to the lowest percentage (6.94 percent) in village Jhojhu Kalan. The ratio of the highest to the lowest percentage is high, i.e. 6.44. Moreover, the value of coefficient of variation (56.15 percent) also indicates considerable inter village variation in the

percentage of agricultural labourers across the sample villages. Furthermore, there is substantial variation in the proportion of male non-farm labourers across the sample villages; as indicated by the value of coefficient of variation (38.83 percent). The percentage of non-farm labourers varies from the highest (68.56 percent) in village Natwal to the lowest

Table-1: Profile of Sample Villages

Name of Village	Total population	Percentage of Scheduled Caste	Percentage of literate	Percentage of Male Cultivators	Percentage of Male Agricultural Labourers	Percentage of Male Non-Farm workers	Average Size of Holdings (Acres)	Percentage of Irrigated Area	Cropping Zone	Number of Tractors	Distance From Nearest Town (km)
Bhalot	7231	16.01	72.44	43.53	13.05	43.42	7.47	90	W+P	170	13
Bilbilan	1410	15.88	61.70	37.10	33.91	28.99	13.31	100	W+P	65	19
Dadsia	1866	29.04	66.50	11.74	35.81	52.45	22.75	100	W+P	15	5
Khera	2208	67.30	69.97	14.17	38.10	47.73	13.37	100	W+P	53	9
KotKachhwa Khurd	894	34.67	77.85	58.68	30.04	11.28	6.73	99.55	W+P	45	14
Mathana	7630	24.67	50.63	28.53	21.72	49.75	7.37	100	W+P	165	12
Mohamadpur	2753	33.24	65.60	61.83	13.60	24.57	6.43	100	W+P	163	16
Natwal	2312	35.99	56.62	22.61	8.83	68.56	8.58	76.45	W+P	35	18
Pardhana	3563	25.57	63.82	48.61	13.86	37.53	10.92	100	W+P	89	20
Peedal	5410	12.07	57.65	38.37	16.42	45.21	10.33	100	W+P	221	8
Sujwari	1986	49.24	59.87	13.83	31.41	54.76	5.47	100	W+P	12	13
Ghogharia	7369	29.5	57.87	57.46	14.01	28.53	13.11	98.91	W+C	278	12
Jatusana	4187	43.23	6.73	23.92	16.84	59.24	12.64	100	W+C	38	22
Jeora	3829	22.72	59.57	57.25	10.91	31.84	20.08	79	W+C	40	6

Jhagroli	3389	15.99	69.84	18.72	37.3	43.98	17.96	100	W+C	26	10
Jhojhu Kalan	4188	18.58	68.4	46.55	6.94	46.62	18.95	34.91	W+C	98	16
Lambi	1670	58.20	51.62	34.49	44.75	20.76	11.95	91	W+C	40	18
Manawali	3564	16.61	58.16	56.52	19.44	24.04	9.43	95	W+C	109	9
Patoda	7447	18.85	68.33	49.54	7.48	42.98	9.48	85.72	W+C	141	20
Sangel	2995	16.12	60.5	49.76	11.97	38.27	18.82	31.41	W+C	33	18
Siwana	5478	32.33	65.12	68.38	22.19	9.43	5.44	100	W+C	113	8
UnchaMajra	3857	23.54	67.92	43.90	7.81	48.29	5.47	100	W+C	111	5
CV	53.70	49.90	-	42.62	56.15	38.83	44.23	-	-	76.40	40.33

Source- Primary Survey (2021-22) and Census of India (2011)

Note: W+P= Wheat-Paddy Zone, W+C= Wheat-Cotton Zone

(9.43 percent) in village Siwana; and the ratio of the highest to the lowest is 7.27, which is quite high. Thus, there are big variations across the sample villages in the occupational structure and caste structure. These observed variations in caste structure and occupational structure may significantly affect the supply as well demand side of rural agricultural labour market; and consequently, the wage rates of permanent farm servants.

(iii) Size of Holdings and Mechanisation:

The average size of holdings in a village influences the demand side of agricultural labour market. It can be observed from Table-1 that that there is considerable variation in the average size of holdings across the sample villages. The biggest average size of holdings is observed in village Dadsia (22.75 acres); while village Siwana has the smallest average size of holdings (5.44 acres). The biggest average size of holdings is 4.18 times more than the smallest average size of holdings. The value of coefficient of variation is also high (44.23 percent). The degree of mechanisation in terms of number of tractors across surveyed villages also varies considerably. Village Ghogharia has 278 tractors, whereas there are only twelve tractors in village Sujwari. The coefficient of variation is around seventy-six percent.

(iv) Irrigation and Cropping Pattern:

The cropping pattern also affects the demand for farm labour in rural labour market. Further, the level and type of irrigation mainly determines the cropping pattern. It can be observed from the table that twelve villages out of the twenty-two villages have the whole area, i.e. a hundred percent under irrigation and eight villages have more than seventy-five percent irrigated area, but less than hundred percent, and the remaining two villages have less than fifty percent irrigated

area. So, there is significant variation in terms of irrigated area across the surveyed villages. Consequently, there is considerable variation in the cropping pattern across the surveyed villages. We have divided the whole state into two cropping zones: Wheat-Cotton Zone and Wheat-Paddy Zone, but there are some villages in Wheat-Cotton Zone where the main crops other than cotton are millets and oilseeds.

(v) Urban Connectivity and Literacy:

The proximity of a village to an urban centre increases the wage rates of permanent farm servants as chances of their employment in non-farming activities increase due to nearness of the urban centre. Similarly, a higher level of literacy opens the doors for employment in non-farming sectors, which reduces the supply of agricultural labourers in rural labour market and has a positive effect on the wage rates of permanent farm servants. The distance of villages from nearby town and literacy rate are detailed in Table-1.

The maximum distance from the nearest town is twenty-two km in case of village Jatusana, while the minimum distance is five km in case of village Dadsia and Uncha Majra. The coefficient of variation of distance from the nearest town is also high (40.33 percent). Hence, the sample villages are located at different distances from the nearest town. There are nine villages out of twenty-two villages which have weak urban connectivity because these are situated more than fifteen km away from the nearest town whereas seven villages have good urban connectivity being situated at a distance of less than ten km from the nearest town.

In the sample villages, the highest literacy rate is 77.85 percent in case of village Kot Kachhwa Khurd and the lowest literacy rate is merely 50.63 percent in village Mathana. The highest literacy rate is 1.54 times greater than the lowest literacy rate. Thus, there is considerable variation in literacy rate across the sample villages.

Section-II

Variations in the Wage Rates of Permanent Farm Servants across Different Zones

The variations in the wage rates of permanent farm servants across different zones of the state have been discussed and analysed in detail in this section. There are many approaches and ways to divide the state into different regions in the literature as we have divided Haryana into two types of zones i.e. agro-climatic zones and cropping zones. For agro-climatic zones, we have used the scheme of Department of Economic and Statistical Analysis, Haryana and for cropping zones, the two zones scheme of National Agricultural Technology Project (NATP) of Indian Council of Agricultural Research (ICAR) has been used which are given in Table-2 and Table-3.

Table-2: Agro-Climatic Zones

Sr. No.	Zone	Number of districts	Districts
1	Northern	6	Panchkula, Ambala, Yamunanagar, Kurukshetra, Karnal, Panipat
2	Central	5	Kaithal, Jind, Sonipat, Rohtak, Jhajjar
3	Western	5	Hisar, Bhiwani, Fatehabad, Sirsa, Charkhi Dadari
4	Southern	6	Gurugram, Faridabad, Palwal, Rewari, Mahendragarh, Mewat.

Source: Department of Economic and Statistical Analysis, Haryana

Table-3: Cropping Zones

Cropping Zones	Districts
Wheat-Paddy	Ambala, Panchkula, Yamunanagar, Faridabad, Palwal, Kaithal, Karnal, Kurukshetra, Panipat, Sonipat and Rohtak
Wheat-Cotton	Jind, Hisar, Fatehabad, Sirsa, Bhiwani, Charkhi Dadri, Jhajjar, Gurugram, Mahendragarh, Mewat and Rewari

Source: Report of NATP (National Agricultural Technology Project)

Section-2

Variations in the Wage Rates of Permanent Farm Servants across Agro-Climatic Zones:

The details regarding the mean wage rates of permanent farm servants in the four zones is given in Table-4. It is apparent from the table that on the average, the permanent farm servants working in Western Zone are getting the highest wage rate (Rs. 1,28,043) and the lowest mean wage rate (Rs. 108529) is observed in Northern Zone. The permanent farm servants working in Western Zone are getting Rs. 19514 more than the permanent farm servants working in Northern Zone. So, there is considerable variation in the mean wage rates of permanent farm

Table-4: Annual Mean Wage Rate of Permanent Farm Servants: Agro-Climatic Zones

Agro-Climatic Zones	Number of Sample Permanent Farm Servants	Mean Wage Rates (Rs.)	Standard Deviation (SD)	Coefficient of Variation (CV)	Ratio of Maximum to Minimum Wage Rates in the Region
Northern Zone	60 (27.27)	108529	20721.29	19.13	2.45
Central Zone	50 (22.73)	117920	19178.73	16.36	2.75
Western Zone	50 (22.73)	128043	23790.15	18.61	2.49
Southern Zone	60 (27.27)	121448	26451.31	21.84	3.54
All	220 (100)	118909	24736.02	20.80	3.74

Source- Primary Survey (2021-22)

Note: Figures inside parentheses are percentage.

servants across agro-climatic regions. The highest mean wage rate of permanent farm servants is about eighteen percent higher than the lowest mean wage rate. The variation around the mean wage rate in each zone is also given in Table-4. The coefficient of variation (CV) is the highest in Southern Zone (21.84 percent), and the lowest in Central Zone (16.36 percent). The ratio of the highest to lowest is the highest in Southern Zone (3.54), and the lowest in Western Zone. So, one can say that there is considerable variation in wage rate of permanent farm servants in each zone. the variation in mean wage rate across the agro-climatic conditions may be due to various factors like the proportion of share wage permanent farm servants in total permanent farm servants, the balance of supply and demand for permanent farm servants, cropping pattern, per acre productivity, etc.

Variation in Wage Rates across Cropping Zones:

The analysis of variations in the wage rates of permanent farm servants across cropping zones is now presented. The state is divided into two zones on the basis of main cropping-pattern viz., Wheat-Paddy Zone and Wheat-Cotton Zone. The details regarding mean wage rates of permanent farm servants across cropping zones is shown in Table-5. It can be observed from the table that on the average, permanent farm servants working in Wheat-Cotton Zone are getting Rs. 8782 higher wage rates than permanent farm servants of Wheat-Paddy Zone. The mean wage

rate of permanent farm servants working in Wheat-Cotton Zone is 7.66 percent higher than that observed in Wheat-Paddy Zone. However, the variability of wage rates within

Table-5: Annual Mean Wage Rate of Permanent Farm Servants: Cropping Zones

Cropping Zones	Number of Sample Permanent Farm Servants	Mean Wage Rates (Rs.)	Standard Deviation (SD)	Coefficient of Variation (CV)	Ratio of Maximum to Minimum Wage Rate in the Region
Wheat-Paddy Zone	110 (50)	114518	22974.06	20.14	3.26
Wheat-Cotton Zone	110 (50)	123300	23885.55	19.37	3.74
All	220 (100)	118909	24736.02	20.80	3.74

Source- Primary Survey (2021-22)

Note: Figures inside parentheses are percentage.

the two zones is almost similar; the coefficient of variation in Wheat-Cotton Zone (19.37 percent) is only slightly less than the coefficient of variation in Wheat-Paddy Zone (20.14 percent). However, the ratio of maximum to minimum wage rate of permanent farm servants is greater in Wheat-Cotton Zone (3.74) than that observed in Wheat-Paddy Zone (3.26). So, there is no big difference in terms of CV, as well as, ratio of maximum to minimum wage rate between both cropping zones. It shows that the variations in the wage rates of permanent farm servants in both zones are almost similar. In contrast to this, the variations in the wage rates of permanent farm servants are more pronounced in the agro-climatic regions. On the basis of the results presented in this section, we can say that there are regional variations in the wage rates of permanent farm servants. It is observed that there are greater variations in the wage rates of permanent farm servants across agro-climatic zones, than the variations observed between cropping zones. It is clear that the permanent farm servants working in Western Zone have high mean wage rate in comparison to other zones of the state. The mean wage rate observed in Western Zone is eighteen percent higher than that observed in Northern Zone. The cultivation of cotton and greater prevalence of share wage contracts seem to be the reasons for higher wage rates in Western Zone.

Conclusion:

In this study, the wage rates have been compared across regions. Although, Haryana is a small state in size yet there are considerable variations in wage rates and working conditions of permanent farm servants across agro-climatic zones of the state. For examining regional variations in the wage rates of permanent farm servants, Haryana has been divided as per two regionalization schemes, i.e. agro-climatic zones (Northern Zone, Western Zone, Central Zone and Southern Zone) and cropping zone (Wheat-Paddy Zone and Wheat-Cotton Zone). The interregional analysis reveals that there are considerable variations in the mean wage rates of permanent farm servants across agro-climatic regions. The highest mean wage rate of permanent farm servants, found in Western Zone (Rs. 1,28,043), is greater by approximately eighteen percent than the lowest mean wage rate of permanent farm servants, observed in Northern Zone (Rs. 108529). Similarly in cropping zones, the mean wage rate of permanent farm servants observed in Wheat-Cotton Zone is 7.66 percent high in comparison to that found in Wheat-Paddy Zone. Thus, it is clear that the wage rates of permanent farm servants do vary across agro-climatic zones and cropping zones.

References

- Bardhan, K. (1973). Factors Affecting Wage Rate for Agricultural Labour. *Economic and Political Weekly*, 8(26), A56-A64. Retrieved from <https://www.jstor.org/stable/4362790>
- Bardhan, P. (1973). Variation in Agricultural Wages: A Note. *Economic and Political Weekly*, 8(21), 947-950. Retrieved From <https://www.jstor.org/stable/4362668>
- Bardhan, P. K. (1979). Wages and Unemployment in a Poor Agrarian Economy: A Theoretical and Empirical Analysis. *Journal of Political Economy*. 87(3), 479-500. Retrieved From <https://www.jstor.org/stable/1832019>
- Bardhan, P. K. & Rudra, A. (1980). Labour Employment and Wages in Agriculture: Results of a Survey in West Bengal, 1979. *Economic and Political Weekly*. 15(45/46), 1943-1949. Retrieved From <https://www.jstor.org/stable/4369212>
- Basant, R. (1983). Attached Labour and the Casual Labour Wage Rate. *Economic and Political Weekly*. 19(9), 390-396. Retrieved From <https://www.jstor.org/stable/4373011>
- Bhalla, S. (1979). Real Wage Rate of Agricultural Labour in Punjab: 1961-1977: A Preliminary Analysis. *Economic and Political Weekly*, 14(26), A57-A68. Retrieved From <https://www.jstor.org/stable/4367735>
- Chattopadhyay, M. (1977). Wage Rates of Two Groups of Agricultural Labour. *Economic and Political Weekly*, 12(13), A20-A22. <https://www.jstor.org/stable/4365436>

- Ghose, A. K. (1980). Wages and Employment in Indian Agriculture. *World Development*, 8(5&6), 413-428. doi: 10.22004/ag.econ.233743
- Datt, G. (1989). Wage and Employment Determination in Agricultural Labour Market in India [Doctoral Thesis, Australian National University, Canberra (Australia)] Retrieved From <https://openresearch-repository.anu.edu.au/bitstream/1885/10743/5/Datt%20G%20Thesis%201989.pdf>
- Gill, G. S. and Singh, N. (1978). Pattern of Employment and Wage Structure of Annual Farm Servants in Different Regions of Punjab. *Agricultural Situation in India*, November, 501-503. Retrieved From <https://agris.fao.org/agris-search/search.do?recordID=US201301391068>
- Lal, D. (1976). Agricultural Growth, Real Wages, and the Rural Poor in India. *Economic and Political Weekly*. 11(26), 2011-2013. A-47-A-61. Retrieved From <https://www.jstor.org/stable/4364737>
- Rajaraman, I. (1986). Offered Wage and Recipient Attribute: Wage Function for Rural Labour in India. *Journal of Development Economics*, 24 (1), 179-195. Retrieved From [https://doi.org/10.1016/0304-3878\(86\)90153-7](https://doi.org/10.1016/0304-3878(86)90153-7)
- Rodgers, G. & Rodgers, J. (1984). Income and Work among The Poor of Rural Bihar, 1971-1981. *Economic and Political Weekly*. 19(13), A17-A28. Retrieved from <https://www.jstor.org/stable/4373106>
- Rudra, A. (1982). *Extra Economic Constraints on Agricultural Labour: Result of An Intensive Survey in Some Villages Near Shantiniketan, West Bengal*. Bangkok. ILO-ARTEP.
- Sahn, D. E. & Alderman H. (1988). The Effect of Human Capital on Wage and Determinants of Labour Supply in a Developing Country. *Journal of Development Economics*, 29(2), 157-183. Retrieved From [http://www.sciencedirect.com/science/article/pii/0304-3878\(88\)90033-8](http://www.sciencedirect.com/science/article/pii/0304-3878(88)90033-8)
- Sharma, V. (2014). Wage Differential between Local and Migrant Permanent Farm Servants in Punjab (India). *The Indian Journal of Labour Economics*, 57(1), 157-167. Retrieved from <https://www.academia.edu/4084985/>
- Sharma, V. (2016). *Farm Workers of Punjab*. New Delhi: LG Publishers.
- Sidhu, M. S. et al. (1997). *A Study on Migrant Agricultural Labour in Punjab*. Ludhiana: Department of Economics and Sociology, Punjab Agricultural University.
- Stigler, G.J. (1962). Information in the Labour Market. *Journal of Political Economy*, 70(2), 94-104. Retrieved From <http://www.nber.org/chapters/c13574.pdf>

Thorner, A. (1955). *The Agrarian Prospect in India*. New Delhi: Allied Publisher Limited.

Government Publications and Reports

Government of Haryana (2021). Economics of Farming in Haryana 2018-19. Department of Economic and Statistical Analysis, Haryana. <https://cdnbbsr.s3waas.gov.in/s32b0f658cbffd284984fb11d90254081f/uploads/2022/08/2022083150.pdf>

Government of Haryana (2011). Statistical Abstract of Haryana, 2009-2010. Economic and Statistical Organization, Chandigarh.

Government of India (2011). Census of India, 2011. https://censusindia.gov.in/census_website/

ICAR, 2015. Vision-2050 Document of ICAR-Central Plantation Crops Research Institute (CPCRI), Kerala.

Indian Council of Agricultural Research and Education. 1977. Recent Progress. ICAR, New Delhi.

Indian Council of Agricultural Research (ICAR). (2004). *Annual Report (2003-2004) by National Agricultural Technology Project (NATP)*. https://icar.org.in/sites/default/files/inline-files/NATIONAL_AGRICULTURAL-PROJECT-01_0.pdf