A Study On Agricultural Wage – Productivity Relationship With Reference To Groundnut Crop In Chittoor District (Andhra Pradesh)

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***Abstract*— The increase in production and productivity are influencing agricultural wages. But the results of empirical studies have shown a positive relationship between real wages and productivity. It is also observed that the real wages seem to have declined or remained stagnant in spite of increasing agricultural production. However, a close relationship may be found between wages and productivity. There are number of studies on the agricultural sector in Chittoor district. But the research on agricultural wage – productivity relationship is very limited. This paper aims to study the Agricultural Wage – Productivity Relationship with reference to Groundnut crop in Chittoor district, Andhra Pradesh. An attempt has been made to study the relationship between wages and yield, output price of major crop 'Groundnut' for entire district as a whole. A regression model is used to study the relationship. In the present study, the relevant secondary data for explanatory and explained variables is collected from the Census of India 1991 : Population Census and also from handbook of statistics and other unpublished official records of the Chief Planning Officer, Chittoor. The primary data required is collected through field survey : 1998-99. In case of female agricultural labour, regarding the lagged yields, the rate of increase in real wages (0.19) is twice as compared to that of money wages. This increase in real wages over money wages reveals that the economic position of the female agricultural labour may be increased due to raise in lagged yields. Owing to the lagged price, the rate of increase in real wages of female agricultural labour (0.39) as compared to the female agricultural money wages (1.41) is approximately one forth. This result shows that about 3/4th of the monetary gains of the female agricultural labour has been taken away by consumer price rise. From this rate of increase in real wages, it may be concluded that the real economic position of the female agricultural labour has been deteriorated marginally. The same variables for the male population is studied and analysed . Further, the same was calculated separately for the three revenue divisions of Chittoor District.**

Keywords- Agricultrual Productivity; Female Money Wagerate; Female Real Wagerate; Male Money Wagerate; Male Real Wagerate; Regression Co-efficients;

I. INTRODUCTION

The term agricultural productivity we mean the varying relationship between the agricultural output and one of the major input such as land. The most commonly used term for representing agricultural productivity is the average yield per hectare of land. After the introduction of modern agricultural technique along with the adoption of hybrid seeds, extension of irrigation facilities and application of intensive methods of cultivation in India, yield per hectare of all crops has recorded a steep rising trend.

Agricultural productivity in India has undergone an abrupt change in the Post-Green Revolution period. But the fruits of green revolution were mostly available to some particular states only, as the introduction of new agricultural strategy was very much restricted into some particular states like Punjab, Haryana and Western Uttarpradesh. Thus while the agricultural productivity in all other states remained more or less static or increased slowly but the agricultural productivity of some crops in those particular states adopting new agricultural strategy has increased substantially. All these had led to a high degree of inter-state differences in agricultural productivity in the country.

The condition of Indian agriculture still largely remains backward although it is considered as the backbone of the Indian economy. Agriculture productivity which is composed of both productivity of land and labour as well, is among the lowest in the world. Average yield per hectare in India is quite below the world average in all crops. It is much lower as compared with even the yield rates prevailing in less advanced countries of the world. With the introduction of economic planning in India, although some steps have been undertaken for improving the conditions of agriculture, its conditions have not changed much.

In subsistence farming, the relation between wages and productivity is not like that in the modern sector where additional labour is employed to increase output and we imagine an employer equating wages with the marginal product. Wages and productivity are related in the sense that wages are paid out of total product, which depends upon productivity.

The increase in production and productivity are influencing agricultural wages. But the results of empirical studies have shown a positive relationship between real wages and productivity. It is also observed that the real wages seem to have declined or remained stagnant in spite of increasing agricultural production. However, a close relationship may be found between wages and productivity.

There are number of studies on the agricultural sector in Chittoor district. But the research on agricultural wage – productivity relationship is very limited. Hence an attempt is made to study the Agricultural Wage – Productivity Relationship with reference to Groundnut crop in Chittoor district, Andhra Pradesh.

II. OBJECTIVES

The following is the objective of the study:

- To study the Agricultural Wage – Productivity Relationship with reference to Groundnut crop in Chittoor district, Andhra Pradesh.

III. METHODOLOGY

An attempt has been made to study the relationship between wages and yield, output price of major crop 'Groundnut' for entire district as a whole. Therefore the following regression model is proposed to study the relationship.

$$Y = a + b X_1 + c X_2 \longrightarrow (1)$$

Where,

Y = Real/money wagerate
X_1 = Lagged yield (Quintals per hectare)
X_2 = Lagged price (Rs. Per quintal)

a, b and c are the constants.

Both the linear and log-linear models have been estimated to the above model and it is decided that the log – linear model yields good results. Hence, the analysis has been carried out to log – linear model only. The log – linear model is as follows :

$$\log Y = a + b \log X_1 + c \log X_2 \longrightarrow (2)$$

In the present study, the relevant secondary data for explanatory and explained variables is collected from the Census of India 1991 : Population Census and also from handbook of statistics and other unpublished official records of the Chief Planning Officer, Chittoor. The primary data required is collected through field survey : 1998-99.

IV. FINDINGS

It is proposed to study the relationship between wages with yield and output prices per quintal of groundnut. Between the linear and log-linear estimates; log-linear model gives better results than the linear estimates. The equation (2) given in the methodology is estimated. The results were analysed based on log-linear estimates for the entire district as a whole.

The estimated regression equation for female money wagerate is

$$Y = -7.2169 + 0.0821 X_1 + 1.4356^{*} X_2$$
$$(0.2840) \quad (0.1258)$$

$R^2 = 0.9064$, $F = 76.8136^{*}$

* Significant at 5 per cent probability level.

The two estimated regression co-efficients of lagged yield (X_1) and lagged price (X_2) are positive. It means, the effect of these two variables on money wagerate (Y) is positive. An increase in these two variables will increase the female money wagerate in Chittoor district. An increase in one unit of lagged yield will increase the female money wagerate by 0.08 units, but this increase is not significant. Similarly, an increase in one unit of lagged price will increase the female money wagerate by 1.44 units. This increase is significant. Hence, female money wages are influenced by changes in the yield and prices of output. One unit increase in output would result in more than one unit increase in money wage showing the improvements in real wages. With respect to the groundnut yield, the positive co-efficients of yield implying that wages are influenced by changes in the yields. It indicates that the benefits of technology has not reached the agricultural labourers at significant level. This indicates that the benefits which accrued to the groundnut farmers through a rise in the output prices also percolated to the agricultural labourers. The co-efficient of constant or intercept is -7.2169. It means the factors which are not considered in the model shows negative effect on female money wages. The collective effect of the two independent variables – X_1 and X_2 is shown by the value of R^2. The value of R^2 is 0.9064. It indicates that 90.64 percent of variation in female money wagerate is observed by these two independent variables. The value of R^2 is significant.

The estimated regression equation for female real wagerate is

$$Y = -4.392 + 0.1886 X_1 + 0.3938^{*} X_2$$
$$(0.1505) \quad (0.0666)$$

$R^2 = 0.7541$, $F = 51.4269^{*}$

* Significant at 5 percent probability level.

The two estimated regression co-efficients of independent variables – X_1 and X_2 are positive. It means the effect of these two variables on female real wagerate (Y) is positive. An increase in these two variables will increase the female real wagerate in Chittoor district. An increase in one unit of lagged yield will increase the female real wagerate by 0.19 units. But this increase is not significant. Similarly, an increase in one unit of lagged price will increase the female real wagerate by 0.39 units. This increase is significant. Hence, female real wages are influenced by changes in the yield and prices of output. The co-efficient of constant or intercept is -4.392. It means, the factors which are not considered in the model show negative effect on female real wages. The collective effect of the two independent variables – X_1 and X_2 is shown by the value of R^2. The value of R^2 is 0.7541. It indicates that, 75.46 percent of variation in female real wagerate is observed by these two independent variables. The value of R^2 is significant.

The estimated regression equation for male money wagerate is

$$Y = -6.8562 + 0.0901^{*} X_1 + 1.4094^{*} X_2$$
$$(0.0349) \qquad (0.0155)$$

$$R^2 = 0.8982 , \qquad F = 70.5855^{*}$$

* Significant at 5 percent probability level.

The two estimated regression co-efficients of lagged yield (X_1) and lagged price (X_2) are positive and significant. It means the positive relationship is observed between independent variables - X_1 and X_2 with dependent variable (Y). An increase in these two variables will increase the male money wagerate in Chittoor district. An increase in one unit of lagged yield will increase the male money wagerate by 0.09 units. But this increase is significant. Similarly, an increase in one unit of lagged price will increase the male money wagerate by 1.41 units. This increase is significant. Hence, male money wages are influenced by changes in the yield and prices of output. One unit increase in groundnut price would result in more than one unit increase in money wage showing the improvements in real wages. The positive and significant co-efficient of yield reveals that wages are influenced by changes in the yield. It mean the benefits of technology have reached the agricultural labourers at significant level. It indicates that a rise in the output prices is beneficial to the groundnut farmers which in turn effects the agricultural labourers. The co-efficient of intercept is -6.8562. It means the factors which are not considered in the model show negative effect on male money wages. The collective effect of the two independent variables - X_1 and X_2 is shown by the value of R^2. The value of R^2 is 0.8982. It indicates a variation of 89.82 percent in male money wagerate is observed by these two independent variables. The value of R^2 is significant.

The estimated regression equation for male real wagerate is

$$Y = -0.2138 - 0.0513 X_1 + 0.3252^{*} X_2$$
$$(0.0189) \qquad (0.0835)$$

$$R^2 = 0.6702 , \qquad F = 16.267^{*}$$

* Significant at 5 percent probability level.

The estimated co-efficient of lagged yield (X_1) is negative and insignificant. It means the negative relationship is observed between X_1 variable and male real wagerate. An increase in the lagged yield will decrease the male real wagerate in Chittoor district. The estimated co-efficient of lagged price (X_2) is positive and significant. It means the effect of independent variable (X_2) on male real wagerate is positive. An increase in the lagged price will increase the male real wagerate in the district. An increase in one unit of X_1 variable will decrease the male real wagerate (Y) by 0.05 units. But this decrease is not significant. Similarly, an increase in one unit of X_2 variable will increase the male real wagerate (Y) by 0.33 units. This increase is significant. Hence, male real wages are affected by changes in the yield and prices of output. The co-efficient of constant is -0.2138. It means the factors which are not considered in the model show negative effect on male real wages. The collective effect of the two independent variables - X_1 and X_2 are shown by the value of R^2. The value of R^2 is 0.6702. It indicates that, 67.02 percent of variation in male real wagerate is observed by these two independent variables. The value of R^2 is significant.

V. CONCLUSIONS

In case of female agricultural labour, regarding the lagged yields, the rate of increase in real wages (0.19) is twice as compared to that of money wages. This increase in real wages over money wages reveals that the economic position of the female agricultural labour may be increased due to raise in lagged yields. Owing to the lagged price, the rate of increase in real wages of female agricultural labour (0.39) as compared to the female agricultural money wages (1.41) is approximately one forth. This result shows that about $3/4^{th}$ of the monetary gains of the female agricultural labour has been taken away by consumer price rise. From this rate of increase in real wages, it may be concluded that the real economic position of the female agricultural labour has been deteriorated marginally.

Whereas for male agricultural labour, in case of lagged yield is observed that there is a decreasing trend in male real wages (-0.05) and an increasing trend in male money wages (0.09). This results indicates that the declining trend in real economic position of the male agricultural labour. With

respect to the lagged price, the rate of increase in real wages of male agricultural labour (0.32) as compared to the male money wages (1.41) is just marginal. This results tells that about 3/4th of the monetary gains of the male agricultural labour has been taken away by consumer price rise. From this rate of increase in real wages, it may be concluded that the real economic conditions of the male agricultural labour has been decreased marginally.

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