CHAPTER II

REVIEW OF LITERATURE
Agriculture plays a vital role in the development of Indian Economy. Much depends on it and any change in it can cause disturbances reaching far and wide. With the balance of economy tipped so precociously on agriculture, its efficiency, productivity plays a crucial role in the national economy. The word ‘Productivity’ first directs towards labour, which in turn directs to labour productivity.

2.1 Resource-Use Efficiency

A large number of studies have been conducted on “Resource-Use Efficiency and Male and Female Labour Productivity in Agriculture”. Some of the important and selected reviews are given below.

Choudhary and Sarma (1961) in their joint paper entitled “Female Labour and farm and family in Agriculture” observed that the female in the nuclear families as compared to joint families, made maximum contribution to the agricultural production activities. The study further revealed that proportion of the female labour in agriculture was greater than that of males.

According to the Census of India, (1971), (Agriculture Survey) rural women play an important role particularly in the agricultural production. Agricultural works like transplanting and harvesting are done mainly by women. It is significant that 81 percent of the rural women workers directly or indirectly engaged in agricultural and allied activities. 21 percent in agriculture proper as cultivators and agricultural labourers. It is higher than the all India average of 15.6 percent. The number of women engaged in household industry was 4.6 percent as against 2.2 percent at all India level.

Mukherji, A.B (1974) in his study “Female Participation in Rural Agricultural Labour in A.P: A Study of Population Geography” identifies and describes the special pattern of the varying extents of female participation in
rural agricultural labour in Andhra Pradesh. It reveals that there is a striking concentration of rural female agricultural labour in Andhra Pradesh. In this he discusses the factors responsible for it.

Charterjee, A (1975) in his study found that in the operations like irrigation, transplantation etc., male labourers were generally employed and operations like harvesting, post harvesting offered the greatest employment opportunities to all the casual male, female and child labourers in Bihar.

Verma and Pareek's (1975) study pointed out that the marginal value productivity of land was higher on small farms as compared to large farms. They argued that small farmers in their effort to get more income from the limited area of land available with them cultivate their land more intensively.

Brahme (1976) in his study on "Economic Conditions of Agricultural Labourers: A study of Shahada Taluk of Dhulia District" examined the economic contribution of agricultural labourers in 'Dhulia' district of Maharastra State and he found that in case of female workers the average number of days of work in agriculture ranged between 80 and 180 in different areas.

Sinha, S.D (1980) in his study "Impact of Technological Development in Agriculture on women in Rural Areas" noticed that the technological advancement has displaced women from their traditional agricultural activities and that they have been marginally replaced by men in agricultural activities like grass cutting, vegetables selling, cow dung collection and selling of milk.

Ramesh et al., (1985) observed that the employment pattern of both male and female labour has changed significantly. This change can be attributed to the (i) difference in input requirements of old and new varieties
of crops (ii) farm mechanization (iii) increase in cropping intensity and irrigation facilities (iv) changes in cropping pattern and many other factors.

Banerjee, B.N (1985) is of the opinion the crop productivity is largely dependent upon the resource-use and efficiency. However, resource-use and productivity in one or the other ways are related to farm size. Some researchers have found an inverse relationship between these two variables, while others have opposed such a relationship. It can safely be said that the relationship between farm size and productivity is dependent upon many factors like fertility, tenurial arrangements, managerial efficiency etc., which are not under direct control of the cultivator.

Sobha (1987) in her book on “Rural Women and Development” examined the status and position of women agricultural labourers in Telangana region of Andhra Pradesh from various angles. The study provides an insight into the details and background of the discriminations and exploitation of female agricultural labour focusing attention on the socio-economic status, level of participation both inside and outside the family, work patriarchy and women’s subordinate position. The individual profiles of female agricultural labour throw light on the society or the life condition of women in the lower strata of the society. In a capitalist society like India, the predominance of exploitative semi-feudal relations make women a target of exploitation at every level. This ever increasing dispaves and the failure of development programme to improve the lot of the rural poor speak for the need of the rural masses to organize themselves.

Rahman, M.M., Islam, M.M and Rahman, M.M (1987) suggested that the farmers in the study area have failed to allocate the given resource optimally and opportunities do exist to increase production and income by
ensuring optimal allocation of the given resources. The results further suggest that by and large the size of farm hardly affects the production function. In other words, the farming efficiency is not dependent on the size of farms.

Alam, Q.M (1989) in his study observed that the land, an important factor of production, was underpaid. Whereas inputs like human labour and tractor power were overpaid. In general he observed that the difference between relative shares and production elasticities of the factors decreased after irrigation technology was introduced.

Narayana Prasad Sharma (1989) in his paper "Wage Differentials for Women Agricultural Labourers" examined the discrimination towards female agricultural labourers. Women as agricultural labourers are discriminated in wage payment through out the country, even in operations such as transplanting and weeding which are women intensive operations and are better performed by them. In some areas, the female wage rates are lower than the prescribed minimum wages. The author, therefore vehemently pleads for effective implementation of the 'Minimum Wages Act'(MWA) in respect of women agricultural labour.

The results obtained by Radha, Y., Raghu Ram, R., Seetharaman, S and Subbaiah, G (1989) indicate that manures, fertilizers and irrigation were quite productively used in both farming systems except in black gram implying that their increased use would further augment farm returns. More than fifty percent of the selected farmers reported that the available credit was not adequate to meet the input costs. Hence all the institutional agencies have to put co-ordinated efforts to make good the credit gaps and thereby contributing for the increase in efficiency of the resources. The farmer in rice-rice farming system have to reorganize the uses of resources like casual labour and seed
while those in rice-pulse farming system should check the irrational use of causal labour, seed and plant protection chemicals in order to increase the returns in farming.

Sabur, S.A and Zahidual Haque, M (1992) in their study noted that the increase of cropped area in the country mostly depends on the increase of winter cropped area. Apart from expansion of modern irrigation facilities, it is essential to know the relative profitability of different winter crops and their resource-use efficiency for further expansion of cropped area during the winter season.

Sib Ranjan Mitra (1993) in his study on “Resource efficiency in Tea plantations” noted that the inputs, capital and labour are not generally utilized to the optimum available capacity. Even under the existing technology, sufficient potentials exist for improving the productivity with proper allocation of the existing resources.

Usha Rani, D.L and Jodha, G.S (1993) in their paper on “Gender differential in work participation in various operations of crop and livestock enterprises in semi-Arid Areas of Rajasthan” noticed that on average about 32 man-equivalent days per hectare were utilized and the maximum (69.32 man-equivalent days per hectare) labour use was on marginal farms and the minimum (20.74 man-equivalent days per hectare) on large farms, showing inverse relationship with the size of holdings. It is interesting to note that in all the size categories female labour use was more than males, averaging about 58 percent of the total labour use.

Inder Sain and Singh, A.J (1994) in their study on “Labour Productivity and Use Efficiency on the Punjab Farms” concluded that the use of family labour declined with the increase in farm size while the share of
hired labour increased directly with the farm size. With a dominant share of causal labour rather than of permanently engaged labour, the labour use intensity varied inversely with the farm size. The marginal value Productivity of hired labour was by and large higher on all the size categories in comparison with family labour. Even the technical efficiency of hired labour was higher and significant over all the size categories in comparison with family labour.

Dey, P.K., Sarker, A.L and Mustafi, B.A (1996) in their Production Function Analysis of Small, Large and Pooled farms observed that the operational area was less than the optimum level in the case of small farms but more than optimum level in the case of large farms. So, small farms could raise their income by increasing more area and large farms could reduce their loss by decreasing area to the manageable size.

Shende, M.V., Atkar, R.B and Shende, T.K (1998) in their study on “Resource Productivity and Input Use Efficiency of major forest crops grown by farmers under Akola District” observed that the inputs for cultivation of all the three crops were utilized and are needed to be increased for maximization of returns.

Subrahmanya, S (1999) in his study on “Female Labour Absorption in Andhra Pradesh Agriculture” found that the demand for total labour increased by 16.2 percent (111 to 129 days per hectare). This increase is only due to female labour which increased by 84.8 percent. Male labour in fact declined by 12.8 percent. The seed technology together with mechanisation reduced the demand for male labour and increased the demand for female labour. The share of females in paddy cultivation increased from 29.7 percent to 47.3 percent. Further the effect of new technology is not scale neutral. The
demand for total as well as female labour for paddy was not sensitive to farm size under traditional paddy.

Kundu, T.K., Deb, V.K. and Kamruzzaman, Md (1999) in their study on “Economic Profitability and Resource-Use Efficiency in Sesame Production in some selected areas of Bangladesh” examined the profitability and the ability of sesame growers to allocate resources in its production. They observed that sesame cultivation in Bangladesh is financially viable but risky since it is highly susceptible to water logging condition. They further noted that more profit can be obtained by increasing investments in the inputs like human labour, cowdung, urea, insecticide and irrigation.

Das, K.K and Banerjee, B.N (2000) in their study on “Farm size and Labour use pattern: A study on attached labour based farms in West Bengal” found an inverse relationship between the size and productivity. They further observed that the farmers of higher groups would not use labour beyond the point at which the marginal productivity of labour starts going down below the market wage rate, whereas no such consideration would generally applied to the smaller farms which are mainly family labour based. On the other hand, variation in the utilization of attached labourers in crop husbandry in different zones and size groups can mainly be attributed to the cropping pattern of the zone and psychological make up of the farmers.

Misra, V.N (2000) in his study on “Role of Female Labour Force Participation in Rural Poverty and Non-farm Employment” found that female labour force participation on rural poverty is quite significant. The contribution of female labour force participation in explaining inter-state variations in non-farm employment has so far been negative, indicating thereby that the states with higher female participation have lower non-farm
employment. Significantly negative coefficients of fertility and real agricultural wages in explaining female labour force participation have also to be recognised. Lower the fertility, higher would be the female participation. Female workers belong to low income households, their participation in economic activities other than household and agriculture depend to a great extent on employment opportunities created by the public investments along with the measures for improving health, education and utilities.

Sharma, H.R., Jog Raj and Virender Kumar (2001) in their study on “New Agricultural Technology and Farm size Productivity Relationship: A Village level Analysis” examined the farm size productivity relationship. They observed that the inverse farm-size productivity relationship did not hold true in all the villages, and in some villages it was even positive and statistically insignificant. Among different crops, the negative relationship was more universal and robust in case of paddy in comparison to wheat, where significant negative relationship was found only in five out of nine villages. More or less similar results were obtained regarding the effect of farm size on inputs use.

Sujay Mitra (2002) in this study on “Resource-Use Efficiency of Barga Farms” observed that the sample bargadars belonging to lower rung of economic ladder use their scarce resources inefficiently and unproductively. Actually they least bothered about optimal allocation of resources and productivity. Agriculture is merely a mode of life to them but not the sword of business. Poor cropping intensity and inefficient resource-use in production process make it clear that they are not even aware of the new technologies and modern know-how to reap maximum profit.
Srinivasa Rao, N., Shareef, S.M and Raju, V.T (2002) in their study on "Resource Productivity and Resource-Use Efficiency in Bela lands in Srikakulam District of Andhra Pradesh" observed that the resources which were used inefficiently in the production process are to be recategorized in order to raise the productivity on paddy farms in bela lands. The resource-use efficiency in bela cultivation has been judged by comparing with their respective factors. It appears that the cultivation have not been able to allocate their inputs efficiently.

Sekar, I and Ramaswamy, C (2001) in their paper "Resource-Use Efficiency and factor share analysis in Mungbean in India" found that labour utilisation has been in excess use and needs to be curtailed nevertheless, the expenditure on mungbeen seeds may be increased to enhance mungbean returns at farm level. Farm operations such as harvesting, land preparation, threshing and weeding occupied huge share in total cost of cultivation of mungbean, since substantive quantum of labours are hired for these operations.

Jyothirmai, U.L., Shareef, S.M and Panduranga Rao, A (2003) in their study on "Resource-Use Efficiency of Paddy Crop in Three Regions of Nagarajuna Sagar Command Area in Andhra Pradesh" observed that irrigation water was found to be insignificant in head and middle regions. Seed was found to be insignificant in middle and tail regions. Fertilizer and labour were found to be insignificant in head and tail regions respectively. Analysis of resource-use efficiency of paddy farms indicates 56 to 61 percent realization of the maximum possible income by the farmers is from their given set of resources.
Vagdevi, T.S.N., Raju, V.T and Shareef, S.M (2004) in their study on “Resource Productivity and Resources-Use Efficiency on Vegetable farms of Krishna District of Andhra Pradesh” found that the marginal value product to opportunity cost ratios for various resources had clearly indicated inefficient use of resources at varying magnitudes since the ratios were negative. This clearly indicates the scope for reorganization of farm resource so as to improve the profitability by considerably reducing the existing pattern of resource-use. The positive figures showing less than one in marginal value product to opportunity cost ratio indicate excessive utilization, whereas more than one indicate that the use of inputs can be increased to get more profits. The production function analysis has revealed the predominant operation of diminishing factor returns and diminishing returns to scale.

Singh R.S., Singh V.V and Pradeep Shrivastava (2005) in their study “Resource-Use Efficiency for Food grain Production in Indian Agriculture” observed that the estimated values of the elasticity coefficients of production function for most of the included variables were positive and significant, indicating the positive influence on the food grain productivity. The sum of elasticity coefficients was greater than unity showing thereby increasing returns to scale. This indicates that any further increase in use of these resources would lead to a more than proportionate increase in the productivity. The variation explained by the independent variables was about 98 percent, which indicates that all most all the variables influencing the yield of wheat were included in the function. Irrigation was found to be the most determining factor in the productivity of food grain.

Sonika Gupta and Sharma, R.K (2005) conducted a study in Ghumarwin block of Bilaspur district in Himachal Pradesh to find out the differences in input use, crop productivities and factors affecting crop
productivities / income between male headed householders (MHH) and female-headed householders (FHH). However, the contribution of female labour was higher than male labour in all the operations and was found to be different in two types of households. Linear regression model was used to assess the factors affecting productivity (income) of different crops. It was found that the land was significant in all the crops. However, the value of the regression coefficient was higher in case of male headed households for maize and paddy whereas in case of wheat it was higher in female headed households. The higher level of education will also help in gathering form information particularly in seed, fertilizers, credit etc., This will help in increasing the farm productivity in a significant manner.

2.2 Technical Efficiency

Farrell (1957) carried out the first empirical study to measure technical efficiency for a cross-section of firms by using a deterministic frontier approach. This approach later extended by Aigner and chu (1968) and Timmer (1971), has some limitations. In this approach, all firms share a common frontier and any variation in firm efficiency is measured relative to this frontier. Hence, this approach ignores any random factors that can influence the efficiency of a firm. Moreover, the results of this approach are very sensitive to the selection of variables and data errors. Later, Aigner et al., (1977) and Meeusen & Den Broeck (1977) independently developed a stochastic frontier approach to measure technical efficiency. The original stochastic specification approach was applied to cross-section data. The error term was a composite variable, consisting of random noise and a one-sided residual term (which follows a half-normal distribution). A large number of studies have been conducted on 'Technical Efficiency'. Some of the important and selected reviews are given below.
Sampath, R.K (1979) in his paper “Nature and Measurement of Economic Efficiency in Indian Agriculture” estimated the level of economic efficiency of farmers in Deoria district of Uttar Pradesh. This study reveals that there exists considerable economic inefficiency in the Indian agricultural system. Thus there exists ample scope for increasing farm income by utilizing the existing resources optimally. This inefficiency is of the order of 36.53 percent. In other words, the difference between the potential output and the actual output as a percentage of the potential output is 36.53 percent, i.e., we can increase the farmers income by 56.55 percent over the existing level by proper utilization of the existing resources.

Umesh, K.B and Bisaliah, S (1991) in their paper “Efficiency of Groundnut Production in Karnataka : Frontier Profit Function Approach” noticed that the average economic efficiency is found to be considerably high in both TMV-2 and SP-I variety farms and in both the seasons, i.e., the observed profit is found to vary from 68 percent to 87 percent of frontier efficient profit. With regard to labour utilization and its efficiency, it is found that, even though the economic efficiency was high in both TMV-2 and SP-I variety farms during summer, labour use efficiency is found to be lower during summer compared to that of kharif season. Labour use efficiency is found to be higher in Chitradurga district than in Dharward district. In general the groundnut production has shown a labour use efficiency of about 43 percent, reflecting inefficiency in labour allocation.

Jayaram, H., Chandrasekar G.S and Lalitha Achoth (1992) in their paper on “Economic Analysis of Technical Efficiency in Rice Cultivation in Mandya; Some Issues in Resource Pricing” observed that actual and frontier usage of inputs in the production of rice indicated that all the factors under consideration were used at levels, higher than the frontier level by both large
and small farmers. The small farmers in the study area are apparently not faced with the problem of lack of access to resources. The small farmers used resources of levels comparable with those of the large farmers. The quantum of excess use of inputs in the production of rice was 15 percent in the case of large farmers, while among the small farmers it was 30 percent.

Arndam Banok (1994) in his paper "Technical Efficiency of Irrigated Farms in a Village of Bangladesh" estimated the level of technical efficiency for a sample of 99 irrigated farms in a village chota aselia of Bangladesh. He found that 88 out of 99 farms have a technical efficiency of 71 percent or above, 13 farms show technical efficiency of 91-100 percent. A very interesting finding is that ten out of thirteen most efficient farms belong to the category of small farms. It is also observed that owner-tenant tenant farms are technically more efficient than owner farms.

Rajasckharan, P and Krishnamoorthy, S (1999) in their paper "Technical Efficiency of Natural Rubber Production in Kerala: A Panel Data Analysis" used the stochastic frontier production function model which incorporated unbalanced panel data. The farm specific technical efficiencies estimated were time invariant and it ranged from 0.546 to 0.957 with a mean technical efficiency of 0.820. Variations in the technical efficiencies of the estates between the two agro-climatic regions were not significant, while they are between private and public sector estates.

Mythili, G and Shanmugam, K.R. (2000) in their paper "Technical Efficiency of Rice Growers in Tamil Nadu: A Study based on Panel Data" used the stochastic frontier production function approach. The production process is modelled with a single-output production frontier. The data used the farm level panel data for the years 1990-91, 1991-92 and 1992-93 for Tamil Nadu state. The data have been compiled under the scheme of 'cost of
cultivation of principal crops'. The maximum likelihood method is used to estimate the frontier function. They found that the technical efficiency varies widely (ranging from 46.5 percent to 96.7 percent) across sample farms and is time invariant. The mean technical efficiency is computed as 82 percent, which indicates that on average, the realised output can be increased by 18 percent without any additional resources. This is found to be higher than the measures determined earlier by using data of earlier period for the same region with cross-section analysis.

Shanmugam, K.R (2003) in his paper "Technical Efficiency of Rice, Groundout and Cotton Farms in Tamil Nadu" estimated technical efficiency of agricultural production at the farm level. He found that land and labour inputs are the significant determinants of output of almost all crops in the state. Fertilizer variable also influences positively the yield levels of rice and cotton crops. The other variable cost is significant only in irrigated groundnut. The returns to scale parameters for production of almost all crops are close to one (constant returns to scale). There is considerable evidence that the observed outputs of all principal crops selected for the study are less than their respective potential outputs due to technical inefficiency. The average technical efficiency values of raising rice I, rice II, irrigated groundnut, rainfed groundnut and cotton in Tamil Nadu are 82 percent, 82 percent, 68 percent, 76 per cent and 68 percent respectively. The technical efficiency of raising irrigated groundnut is relatively high in own land cultivation as compared to that in leased land cultivation.

Rama Rao, C.A., Chowdry K.R., Reddy Y.V.R and Krishna Rao, G.V (2003) in their paper "Measuring and Explaining Technical Efficiency in Crop Production in Andhra Pradesh" made an attempt to examine the levels of technical efficiency in the production of three major crops, viz., rice, groundnut and cotton in the state of Andhra Pradesh in India. They observed that the analysis of technical efficiency indicated that there was considerable
scope to improve the yields of the crops in the existing conditions of input use and technology. It is to be added, however, that these estimates of inefficiency may be sensitive to the distributional assumptions made with respect to the inefficiency term in the model.

Kumar, L.R., Srinivas, K and Singh, S.R.K (2005) in their joint paper “Technical Efficiency of Rice Farms Under Irrigated Conditions of North West Himalayan Region- A Non- Parametric Approach” used farm level data to analyse the various efficiency measures of rice under irrigated conditions in North Western Himalayan region. The overall technical efficiency in the case of improved rice growing farms is higher than that of rice farms growing local varieties. The results also indicate that in case of local rice growing farms, the scale inefficiency contributes more to the over all technical inefficiency. From the policy point of view, increasing the share of rice cultivation under irrigated situation in the total farm areas can bring about improvement in the overall technical efficiency. With regard to farms growing improved rice varieties, pure technical inefficiency makes the greatest contribution to the overall inefficiency.

2.3 Regional Variations in Agricultural Productivity

A large number of studies have been conducted on “Regional Variations in Agricultural Productivity”. Some of the important and selected reviews are given below.

Gopalakrishna, M.D and Rama Krishna Rao, T (1964) in their paper on “Regional variations in Agricultural productivity in A.P”, while studying the degree of variations in the value of agricultural output per acre and output per head in A.P attempted a district wise study to account for the causes of variations during 1959-60. The functional relationship between the value of output per acre and associated variables viz., percentage of irrigated area and
percentage of area under food grains and fodder were studied. They have reached the conclusion that among two input variables irrigation ought to be judged as an important factor affecting the value of output per acre, whose ‘t’ value is significant at 5 percent level and it is not significant with respect to the other variable.

Rao, C.H (1964) in his study concluded that the marginal productivity of land and labour for partially irrigated farms (Rs. 4.74 and 1.75 respectively) was higher than that for unirrigated farms (Rs. 3.31 and Rs. 1.28 respectively). Marginal productivity of land for farms of below 10 acres (Rs. 6.32) was higher than that for farms in the size of above 10 acres (Rs. 1.79). But marginal productivity of labour for farms of above 10 acres (Rs. 1.79) was higher than that of farms of below 10 acres (Rs. 1.08).

Kahlon et. al (1971) in their study "A Comparative Analysis of dry and Irrigated farming in Ferozpur District, Punjab", concluded that the cropping intensity in the irrigated areas (131.62 percent) was found to be substantially (significant at 1 percent level) higher than in the unirrigated areas (88.97 percent). But the cropping intensity showed a tendency to decline with the increase in the size of holdings both in the irrigated and unirrigated areas. The variation in cropping intensity between the size groups in unirrigated areas was not significant, while it was significant at 5 percent level unirrigated areas.

Nishar Abu (1975) found positive relationship between cropping intensity and irrigation, and between cropping intensity and farm size under Moyong lift irrigation project, Assam. The introduction of irrigation has significantly raised the cropping intensity in the sample farms from 131 percent in 1967-68 to 151 percent in 1968-69. It was also found that there exists inverse relation between farm size and crop intensity.
Sudhin, K and Mukhopadhyay (1976) in their paper 'Sources of Variation in Agricultural Productivity' has concluded that the sources of variations in Agricultural productivity were explained by the differences in the level of input use. It was observed that 41 percent of the variation in output was explained by measured inputs. The decomposing of the large residuals into two components i.e., regional effects and temporal effects revealed that 95 percent of the variations of the total disturbances were attributed to the region effects.

Raheja, S.K et al., (1977) have studied the regional variations in adoption of high yielding varieties and their productivity with the help of sample surveys for assessment of high yielding varieties programme during 1973-74 covering 88 districts spread over 15 states of the country, examining two major cereals, viz., rice and wheat. For rice crop, it was observed that the extent of adoption of HYV in different regions had no direct bearing on their yield rate. But owing to lack of assured water supply and resource endowments of the cultivators, the regional variations were more marked compared to wheat.

Ashok Parikh and Pravin Trivedi (1982) in their study on 'Impact of Irrigation and Fertilizers on the Growth of Output in A.P' found that the marginal productivities of irrigated areas compared with that of unirrigated areas is about one and half (1½) times higher in the case of groundnut and tobacco. Regions growing rice show higher marginal productivities with respect to fertilizer input.

Tewari, S.K (1982) study indicates that the empirical relationship between cropping intensity, percent of gross irrigated area and percentage of area under small size farms together explain 35 percent of variation in
cropping intensity. Relationship between percentage of gross irrigated area and cropping intensity was found to be positive and significant. Relationship between percentage area under small farms and cropping intensity was also found to be positive and significant.

Mahender Reddy, J (1983) analysed district wise and region-wise growth rates of area, yield and output of foodgrains and one commercial crop namely, groundnut in A.P. The main objective is to see whether the growth rate during post-green revolution period 65-81 is significantly different from the pre-green revolution period 56-64. Secondly, the study estimated whether the extent of fluctuations has increased (or) decreased after green revolution in A.P and in its three regions. Thirdly, the study also, attempts to find out whether there has been any change in the production of yield since the formation of the state. According to his study food production has increased from an average annual output of 6.35 million tonnes during 56-61 to 9.32 million tonnes during five year period covering 76-81. During this period the share of AP in all India production of foodgrains has declined from 8.58 percent to 7.65 percent. Growth of output of food grains and total agricultural output of A.P was not commensurate with the growth of inputs. Fertilizer consumption in A.P is near the top in all India fertilizer consumption accounting for about twelve percent of all India fertilizer consumption.

Sharma, R.K et al.,1988) in their study “Resource-Use Variability on Irrigated and Unirrigated farms in Mandi district of Himachal Pradesh” found that the proportion of high yielding varieties was higher on irrigated farms than that of unirrigated farms and it showed an increase with the increase on farm size. As regards labour absorption, it was noted that the irrigated farms coupled with modern technology and capital observed more labour than the unirrigated farms. Due to better use of resources, the per hectare farm income was found to be higher on irrigated farms as compared to unirrigated farms.
Mahendra Dev, S (1989) in his study revealed that the level of cropping intensity is higher in the regions with higher percentage of net sown area irrigated and with higher intensity of land use with irrigation. The analysis proved inverse relationship between size of holdings and cropping intensity.

Sarthi Acharya (1992) in his study on “Labour use in Indian Agriculture Analysis at Macro Level for the Eighties” found that labour use varies extensively across crops and states. Hired labour is used more extensively in crops which use more labour in their crop operations. There is a backward bending labour supply curve among land owners. The overall results showed that there is still potential for labour use in agriculture in the future since some factors are positive promoters. It may, however, be increasingly difficult to absorb more workers over time as modernization brings in retarders as well.

Batta, K.K and Jain T.L (1994) in their paper on “A Study of Inter-State Variations in Rural Development in India” found that there is a slow decline in the coefficient of variation of composite indices for different states from 30.18 percent in 1970-73 to 28.22 percent in 1986-89. It suggests that the inter-state disparities in the levels of rural development have shown a tendency of convergence at a slower rate during the period of study. There appears to have been no remarkable change in the inter-state variations in the pattern of rural development during this period. The coefficient of correlation between the two series of composite indices for the two selected points of time (0.98) also confirms the forecast findings.

Prudhvikar Reddy, P. (1997) in his paper “An Analysis Of Inter Regional and Temporal Variations of Costs - Productivity and Sources of
Growth of Paddy in A.P” found that relatively lower prices of modern inputs viz., fertilizers and tractors in relation to those of traditional inputs, namely, manures and bullock labour (which are partly due to subsidies given to modern inputs) have enabled the farmers to substitute modern inputs for traditional inputs and thereby to obtain higher yields at a lower costs. Further the extension of the analysis to the size-classes reveals that the farm size has no relationship with costs and productivity and the spread of HYV technology across the regions and all classes of farmers bring convergence with respect to costs and productivity.

Utpal Kumar, De (1999) in his paper “Nature and Causes of Inter-District Variations in Yield of Rice in West Bengal, 1970-71, to 1994-95”, observed that the yield of rice in West-Bengal has increased manifold during 1970-71 to 1994-95. This increase was mainly due to the development in the field of irrigation and increasing application of fertilizers. District wise pattern of yield growth not only varied but was divergent. Initially many districts were highly dependent on rainfall and so growth in yield was uncertain. Moreover, the districts having a quite easy access to irrigation sources have experienced fairly high rates of growth in yield. It is possible for them to utilise HYV seeds and use chemical fertilizer more intensively.

Pochanna, K (2001) in his study on “Labour Use in Agriculture” examined the pattern of labour use across the crops and land holdings under irrigated and unirrigated farming condition with special reference to north Telangana in the state of Andhra Pradesh. This study concludes that labour requirement will vary from crop to crop and some crops are more labour intensive than other crops. Some cotton farm operations, both on grounds of tradition and on criteria of efficiency, are performed by male or female workers. This analysis shows that in cotton cultivation female labourers out
number male labourers. The demand for different categories of labour varies across the land holdings. The proportion of hired labour to total labour is increasing along with increase in size of holdings. In contrast, the proportion of family labour is decreasing along with increase in size of holding. The employment of hired labour is more in irrigated farms than in unirrigated farms, which is 54.8 man days in irrigated and 29.7 man days in unirrigated farms. Finally, the findings of the study shows that the positive relationship still prevails between farm size and labour use in North Telangana cotton farm zones.