Chapter – 2

REVIEW OF LITERATURE
Dantwala (1978)\(^1\) presented a brief review of the anatomy of agricultural growth in India and reported that the extent of irrigation is the main factor which explains growth rate in the country. With regard to rice farming, about 77 million hectares (53 per cent) of world rice area is irrigated. 70 to 75 per cent of world rice production also comes from irrigated areas.

Lalitha, A (1980)\(^2\) examined the cropping pattern in Andhra Pradesh during the period of 1957-1977 and found that marked differences are witnessed between 1957-66 and 1967-77 as well as among the three regions. In Andhra, share of rice, cotton, and sugarcane mostly, in Telangana, share of millets, rice, sugarcane and tobacco and in Rayalaseema, share of commercial crops slightly increased. The principal losers in Andhra were millets, in Telangana groundnut and in Rayalaseema millets and groundnut. The highest growth rates were recorded by rice in Andhra, sugarcane and tobacco in Telangana and tobacco in Rayalaseema region. Irrigation and rainfall have impact on wet crops like rice, sugarcane in three regions. Prices have favorably impact on cotton, sugarcane, rice and pulses in Andhra, sugarcane, tobacco and rice in Telangana and most of commercial crops in Rayalaseema. Cropping pattern in Andhra Pradesh reveals that food grains continue in first priority; in this millets occupy first position. There is a shift from millets to rice which may be attributed to increased irrigation. Among the food crops rice was chief beneficiary and in non-
food crops commercial crops like sugarcane and tobacco were the chief beneficiaries.

Rath (1980)\(^3\) examined the performance of agricultural production in India. An exponential trend function was used to estimate production, area and yield rates for the period from 1949-50 to 1977-78. The analysis indicated that the total agricultural production of India grew at an average rate of 2.38 per cent per year during the years 1955-56 to 1978-79. The rate of growth was found to be somewhat higher during the 10 years ending 1964-65 than during the subsequent 13 years when it was only about 2.42 per cent. It was also observed that the sustained growth of foodgrains was entirely due to cereals. Wheat recorded a growth rate of 3.9 per cent and rice of about 3 per cent. In the post-1965 period, with the advent of new High Yielding Varieties (HYVs), the growth rate of wheat almost doubled to 7.06 per cent of this about half was due to increase in area and other half due to increase in productivity of the crop. However, wheat production which increased at the rate of about 11 per cent during 1964-72 registered only 3 per cent growth rate during seventies. But this was not surprising as high yielding wheat had already reached very large areas and achieved economically high level of yield.

Mehra, Shakuntala (1981)\(^4\) while studying instability in Indian agriculture observed an increase in the standard division of production
of all crops by 75 per cent and of food grains by 65 per cent during the decade from 1967-68 to 1977-78 over that of the 1950s to mid-1960s but the mean production of all crops including food grains increased by only 47 per cent during the period. There was even an increase in the in the coefficients of variation of production of food grain crops during the period.

Singh (1981)\textsuperscript{5} while conducting study on “Imbalances in Agricultural Growth” and found that uneven growth rates of individual crop has led to the regional imbalances in the rural prosperity. Rice is the main cereal crop in most of states, even in this crop also the growth rate has not been uniform in the different states. Agriculture is the main income generation factor in rural India. There is any imbalance evidence in growth led to imbalance among the regions and states.

Kahlon and Singh (1981)\textsuperscript{6} were of the opinion that management of capital resources along with its efficient organization with other farm resources is very important for farmers. Massie (1987) defined financial management as the operational activity of a business that is responsible for obtaining and effectively utilizing the funds necessary for efficient operation. The objective of financial management is to ensure that adequate cash is on hand to meet the required expenditure.

Bhagat L.N.(1982)\textsuperscript{7} in his study on “Growth Rates of Output of Coarse Grains and Pulses in a Backward Economy: A Study of
"Temporal-Spatial Variations in Chotanagpur", examined the magnitude and direction of changes in area, yield rate and output of major coarse foodgrains and pulses in relation to their competing crops in the districts of Chotanagpur region in Bihar in the two sub-periods, i.e., pre-High Yielding Verities (HYV) (1956-57 to 1965-66) and post-HYV (1967-68 to 1976-77) period along with the causes underlying these changes and variations. It was found that there was no marked difference in the growth rates of crops grown during the rabi season in the pre-HYV period but the growth rates of area and output of barley and gram were found to be much lower than that of wheat in the HYV period, indicating the farmers’ preference for growing wheat as against barley and gram, however the reasons for comparatively higher growth of wheat area and output were not investigated.

Hazell, Peter, B.R. (1982) made an attempt to estimate the “Instability in Indian Foodgrain Production” and reported that the coefficient of variation of total cereal production was 5.85 per cent, during the period 1967-68 to 1977-78 when measured around the trend. This was nearly 50 per cent larger than the coefficient of variation (4.03 per cent) during the period 1954-55 to 1964-65. It is still quite modest by international standards but these fluctuations can cause substantial price instability because of the high proportion of production retained by farm families.
Grewal, S.S and Rangi, P.S (1983)\(^9\) made an attempt to estimate the growth of Punjab agriculture in relation to productivity increase and response to the use of fertilizer and observed that productivity increase was largely the outcome of increased irrigation and fertilizer use. It was further estimated that one kilogram of fertilizer nutrients yielded about 8 kg of wheat grains during the period 1967-68 to 1976-77 when the average use of fertilizer for wheat crop was about one-third of the recommended dose. During the succeeding period ending 1981-82, this response was only 5.6 kg of wheat per kg of fertilizer nutrients applied. This was the case when fertilizer use was two-third of the recommended level.

Mahender Reddy J. (1983)\(^10\) analyzed the growth and instability in A.P., agriculture for the period 1956-57 to 1980-81. The study examined the relative importance of different districts and 3 regions of A.P., state in the total output of foodgrains, groundnut, pulses and rice. The results of the study reveal that instability is higher in post GRP than pre GRP. The use of modern inputs such as HYVs and fertilizer have shown lower instability under assured source of irrigation, pulses suffered from greater instability than other crops. Rayalaseema region showed higher production fluctuations followed by Telangana and Coastal Andhra. Area fluctuations are smaller than production fluctuations. The study supports the positive relation between growth and instability.
Ray S.K., (1983) analyzed the sources of change in the pattern of growth and instability in Indian agriculture for the period 1950-80. Rice, wheat, coarse cereals, cereals, pulses, foodgrains, oilseeds, sugarcane, cotton, jute and tobacco crops were chosen for the study. The study reveals that instability in production was lower during the 1950s for all the crops and crop groups except tobacco. 1960s and 1970s recorded higher instability in production of all crops which can be attributable to new agricultural technology. Pulses suffered from more severe amplitude of fluctuations. The study concludes that with rapid growth, stability can be achieved if the environment for production is brought under human control and even with a slower growth, production can be made more unstable through price polices.

Sirohi et al., (1983) while conducting study on “Trend of Agricultural Productivity and Production in India” did not support the view that the trend in foodgrain production or total agricultural production has been stagnant or has declined, during the recent period. They examined the trend of production and productivity of wheat per hectare which has significantly increased during the study period, i.e., 1970-71 to 1981-82. The productivity of some crops like bajra, pulses and gram has been stagnant or decreased slightly. Crops like rice and cotton have shown a rising trend. The productivity of total food grains per hectare has also increased during recent years mainly due to rise in
the productivity of wheat crop. The study also indicated that the yearly fluctuations in agricultural productivity and production were so large that they completely overshadowed the general trend of rise and fall of productivity and production.

Bhat et al., (1986)\textsuperscript{13} made an attempt to study the growth rate in production of major crops in Jammu & Kashmir state for the period 1970-71 to 1983-84 and found that the compound growth rate of 4.85 per cent followed by rice and wheat with 1.85 and 1.19 per cent respectively which had been observed to be significant at one per cent level of probability. However, the compound growth rate of area under pulses indicated non-significant trend, i.e., 0.30 per cent but the compound growth rates of production were found to be highly significant in case of rice (3.80 per cent), wheat (2.78 per cent) and oilseeds (10.01 per cent).

Singh and Gangwar (1986)\textsuperscript{14} made an attempt to examine “Trends and Variability in Area, Production and Productivity of Coarse Grains and Pulses in Haryana” for the years 1966-67 to 1980-81” and found that the growth rate of area under green gram and lentil declined at the rate of 10.67 and 2.66 per cent per annum respectively which were found to be statistically significant. The area under gram and black gram also declined at the annual rate of 1.65 and 0.18 per cent, respectively. There had been an increase in the yield of jowar and
barley at the rate of 1.10 and 1.60 per cent per annum respectively. The yield of maize declined at the rate of 1.19 per cent per year followed by bajra (1.05 per cent) which was statistically non-significant. The yield of green gram, black gram and lentil increased while the yield of gram declined but it was non-significant. The yield of green gram, black gram and lentil had growth rates of 6.9, 4.7 and 2.3 per cent per annum respectively. The productivity trend of pulses was near to zero indicating stagnation in the yield of total pulses.

Mahendra Dev (1987)\(^{15}\) while examining the “Growth and Instability in Foodgrain Production”, found that the inclusion of rainfall index in the trend equation has improved the value of coefficient of multiple determination in most of the states which indicates that rainfall was able to explain the major part of the variation in foodgrain production. Weather adjusted growth rates were higher in some states and lower in some others as compared to unadjusted growth rates. The rate of growth in foodgrain production was ahead of population growth only in five states, namely, Maharashtra, Punjab, Utter Pradesh, Haryana and Andhra Pradesh while it was trailing behind in rest of states. Trends in instability for four crops aggregate (rice, wheat, coarse cereals and pulses) show that instability for rice, coarse cereals and pulses declined in some states and increased in some other states. On the contrary, it declined in most of the states for wheat. It was shown that differences in quantity and quality of irrigation might be the major
factor that influenced inter-state variations in growth and instability in food grain production.

Prasad (1987)\(^{16}\) in “A Study on Trend in Area, Production and Productivity of Pulses in Bihar” during 1960-61 to 1989-90 reported that the area, production and productivity of gram and lentil were consistently higher in Zone III, while that for arhar they were higher in Zone I. Growth rate analysis indicated that the compound growth rates of area and production of pulses had, by and large, declined all over the state, except that for production of gram in Zone VI, production of arhar in Zone V and production of lentil in Zone I. A positive growth rate in area was found in lentil only in Zone II and Zone IV. Productivity of all the pulse crops under study had positive growth in all the zones of Bihar during the period under study. The factors like rainfall and area under irrigation had significantly affected the production of pulse crops only in some of the districts of the states.

Hanumantha Rao et al. (1988)\(^{17}\) conducted a study on unstable agriculture and droughts and revealed that the growth of foodgrain output as a whole has been around 2.7 per cent per annum since the beginning of planning in India and there is no evidence of an acceleration or deceleration in the growth rate between the pre and post-green revolution periods. Wheat and rice provide a contrasting picture off growth, the former showing an acceleration and the later a
deceleration in the post-green revolution period. In the more recent years, however, growth rate of rice seems to be picking up, whereas that of wheat seems to be sliding down. There are wide disparities in growth rate of food grains output in different states. These disparities seem to have widened in the post-green revolution period when much smaller number of states experienced above average growth rate than during the 1960s. The variation in the performance of individual states over the pre and post-green revolution periods seemed to be as significant as inter-state variation in performance within each of the two periods. The fluctuations in the output of all crops, except wheat, have increased significantly in the post-green revolution period (1966-85) when compared to the pre-green revolution period (1950-65). The instability in the case of food grains as a whole or all crops put together is significantly lower than for individual crops, indicating that the observed increase in instability in the case of food grains cannot be attributed to green revolution as such. The instability in agricultural production has increased in the post-green revolution period on account of rise in the sensitivity of output due to variations in rainfall. This rising vulnerability of agricultural output, especially of food grain output to drought, is traceable to the high complementarily of new seed-fertilizer technology with water and inadequate expansion of irrigation facilities. Although area under irrigation has increased from about 17 per cent of
cultivated area in early 1950s to around 30 per cent in mid eighties, a good part of this irrigation is itself dependent on rainfall.

Malik et al. (1988)\textsuperscript{18} conducted a study to find linear and compound growth rates of area, production and productivity of wheat in Haryana for the period from 1962-63 to 1983-84. It was observed that during the period 1962-63 to 1985-86, the area under wheat in Haryana increased by 170.54 per cent, production increased by 545.82 per cent and yield per hectare increased by 138.73 per cent. Such a tremendous increase in production of wheat in the state was due to combined effect of increased acreage and productivity. The compound growth rates of area. Production and productivity of wheat for 1960-61 to 1983-84, increased significantly at an average annual growth rate of 4.83 per cent, 9.65 per cent and 7 per cent respectively.

Bandyopadhyay (1989)\textsuperscript{19} while conducting a study on “Growth and Instability in the Production of Main Cereal Crops in West Bengal and Punjab-Haryana”, reported that the elaborate network of irrigation in Punjab-Haryana, independence of the vagaries of the monsoon/rainfall along with the development of private tube well irrigation on a substantial scale, particularly, during post-green revolution period, may have effectively narrowed down the year-to-year fluctuations in the production of wheat. Rice crop has also been introduced in the states which grew at a much faster rate compared to that in West Bengal.
Irreparable damage done to the ancient irrigation network in Bengal during the colonial rule on the other hand, has not been compensated by the development of irrigation during the era of planned development since independence in West Bengal. Irrigation has been the main technological constraint for agricultural production in West Bengal.

Singh (1989) in his study on “Agricultural Instability and Farm Poverty in India”, used the coefficient of variation statistics along with the time series data of major crops for the period 1971-1986 and observed that the yield variability in case of rice crop was the highest, i.e., 29.14 per cent for Punjab followed by the states of Rajasthan, Utter Pradesh, Andhra Pradesh, Orissa, Gujarat, Bihar, West Bengal, Himachal Pradesh and Jammu & Kashmir. It was the lowest, being 6.11 per cent, for the state of Assam. It may be noted that the states having the highest yield variability were found to be having the highest average yield per hectare. The higher average yield and higher yield variability in the case of non-traditional rice growing states are due to intensive cultivation and increasing area and yield of rice. In case of wheat, the states having higher yield variability had lower average yields in general. Hence, it may be said that the wheat is a more assured and stable crop than rice. Mazie crop showed the highest yield variability, i.e., 41.66 per cent in Tamil Nadu, followed by Gujarat (33.11 per cent), Maharashtra (30.33 per cent), Rajasthan (29.14 per cent), Utter Pradesh (28.16 per cent) and Andhra Pradesh (23.61 per cent). It was
the lowest in Assam, being 3.82 per cent. However, this crop showed some variability in the states having higher average yield per hectare. There was not much inter-state variation in yield variability of gram. The major cotton growing states such as Punjab, Haryana, Gujarat, Tamil Nadu and Rajasthan showed greater yield stability. In case of sugarcane, the states like Tamil Nadu, Maharashtra, Madhya Pradesh, Karnataka and Andhra Pradesh, showed the stability in sugarcane production because of having lower value of coefficient of variation and comparatively higher per hectare yield.

Bhalla and Tyagi, (1989) study which extended the period from 1970-73 to 1980-83 also brought out some interesting conclusions. Firstly, it was found that with the passage of time, the new technology had spread to new areas during the eighties. One of the important developments was the introduction of High Yielding Varieties (HYV) rice, mainly IR8, not only in the assured irrigation areas of the northwestern states as a second crop but also for the first time in the southern state of Andhra Pradesh and to some extent in coastal areas of Tamil Nadu. Secondly, the study confirmed that the growth performance of rainfed areas was characterised by the persistence of very large inter year and inter-period disparities. The rainfed areas which had shown poor performance during the first period 1962-65 to 1970-73, recorded very high growth during 1970-73 to 1980-83 as a result of good monsoons. But the states in the eastern region continued
to experience low growth even during this period. Third, the district level analysis also confirmed that with the passage of time the new technology spread to newer areas and encompassed more districts thereby leading to higher output growth rates. The growth of output enabled many low productivity districts to graduate to mid-productivity level and many mid-productivity districts to move to the high productivity category. Thus whereas the number and weight in terms of share in GCA and share in value of output of low productivity districts went down that of high productivity districts went up.

Narla Ramakrishna Reddy (1990)\textsuperscript{22} assessed that the Green Revolution has contributed to higher growth in crop production in Andhra Pradesh, but it widens the inter-regional disparities and intra regional disparities in agricultural growth. The cross section regression coefficients of irrigation, total cropped area and rainfall (explanatory variables) recorded negative signs, implying that the irrigation and rainfall contribute to stabilize fluctuations in production and yields. The study also supports the view that irrigation and rainfall contribute to stabilize the production albeit to a limited extent as the signs of the regression coefficients are negative but still, do not fully account for the variations in both production and yields.

Chattopadhyaya (1991)\textsuperscript{23} in his study broadly suggests that during the last three decades west Bengal’s rice economy was
subjected to technological changes with positive effects on area, yield and production of rice. It cannot be said to have been stagnant over these years. But, it has also been uneven spatially (in the districts) and temporally. The diffusion of the new technology is widely variance among districts and seasons. Increase in variability accompanied the growth of yield and output, thereby increasing the risk of rice cultivation which limits the acceptability of the technology among risk of rice cultivation which limits the acceptability of the technology among risk minimizing farmers. The yield variability seems to be related positively to rainfall variation and negatively to increase in irrigation and fertilizer application, however, the relation is not very clear.

Deshapande, R.S. (1991)\textsuperscript{24} while determining the growth-instability nexus in Maharashtra, found a strong negative relationship between growth and instability in pre-new technology period at state level across crops which changed to a positive but non-significant association after the advent of new technology. Region-wise analysis over the three decades revealed that the relationship emerged stronger in the case of non-drought prone (NDP) districts than that of drought prone (DP) districts. The results indicated instability as a companion of growth for DP districts and not so in the case of NDP districts. The low instability-high growth combination was observed in case of DP districts whereas a high instability-low growth combination was found for NDP districts.
Pal and Sirohi (1991) made an attempt to study the adoption of HYV seeds and growth and instability in crop production in India and reported the changes in the base (mean area and mean yield), yield variability and simultaneous instability (variance). The relative instability in wheat cultivation declined in more irrigated areas. The larger contribution of interaction terms indicates that the production instability. Individual, yield variability was an important source of instability in most of the crops. The changes in yield might have caused the changes in area and this led to higher area-yield co-variability. The cultivation of HYVs in less endowed area and extension of cultivation to marginal and sub-normal land might have caused higher production instability. This problem was more apparent in coarse cereals, pulses and oilseeds. Therefore, it could be concluded that the interplay of agro-climatic factors and new technology led to increase in production instability in India and HYVs can be held partially responsible for this.

Ray (1991) studied the instability in Indian agriculture and found that the turning point, both in rice and wheat production growth rate, appeared to have occurred in the early 1970s. The increased use of HYVs of seeds and modern purchased inputs for accelerating crop output growth rate have made crop production more sensitive to weather and price changes. On the basis of empirical results, it has been concluded that the production instability is and inevitable consequence of rapid agricultural growth and there is little that can
effectively be done about it. The contrasting pictures obtained from rice and wheat production data illustrate the point. Even with a slower growth rate, production can be made more unstable by stability is caused by uncontrollable natural factors; its intensity can be progressively reduced by effective to reduce the instability of cereal production in Haryana.

Vaidyanathan and Mukherjee (1991)\textsuperscript{27} in their study on “State-wise Functional Analysis of Agricultural Growth” during the Period 1952-53 to 1976-77, reported that the proportion of variation in total foodgrain output explained by the model ranges from 62 to 94 per cent, it exceeds 80 per cent only in 5 cases out of 12 considered. While judging the strength of the model, it needs to be borne in mind that the data have both gaps (e.g., irrigation in Orissa and West Bengal) and errors (sampling and non-sampling ones in yield ones in yield estimates) and hence assumptions had to be made in constructing series on fertilizer consumption. Under these circumstances, very high R2 would indeed be rather doubtful. Rainfall and trend explains more than 80 per cent of the area variation in 9 out of the 12 states. Rainfall contribution to the area variation is high, precisely in those states where the overall explanatory power of the model is land.

Venkata Rao (1991)\textsuperscript{28} conducted a study on the production of 22 crops in the North-Eastern region and revealed that for major crops like
rice, other pulses, rapeseed and mustard, sugarcane, etc., stagnancy has set in. There is accelerating trend in the production of potato and relatively minor crops like tur (red gram) and groundnut. On the whole, principal crop groups exhibited low fluctuations in yield per hectare. The major contribution to the growth of crop output in agriculture came from area expansion, the contribution of yield increase was only one-third and the changes in cropping tended to lower the growth of crop output in the entire north-eastern region.

Ramakrishna, G (1992)\(^2\) has observed that agricultural output registered 2.69 per cent growth rate per annum during the period from 1950-51 to 1990-91. Similarly food and non-food grains registered 2.71 per cent and 2.76 per cent growth rate respectively during the same period. The increase in the growth rate of agricultural output is mainly due to an increase in area (1.92 per cent growth rate) in fifties and due to productivity increase in the later periods (1.61 in sixties, 1.72 in seventies and 3.25 per cent in eighties). Hence, productivity is the main contributor to agricultural output growth than area during the study period and its growth rate was also high in post-green revolution period. He also found that there is a positive association between fluctuations and agricultural productivity, but the same association cannot be attributed to production and area.
Jha (1994)\textsuperscript{30} while conducting study on growth and instability in agriculture associated with new agricultural technology during 1972-73 to 1990-91, found decline in yield instability in gross return and yield over years. The decline in yield instability in crops, viz., paddy and wheat was brought about with increased area under irrigation over the years. Nevertheless, the government’s consistent price policy also helped in reduction of instability in farm harvest prices. Thus, it has been inferred that with new technology, instability in agricultural income reduced with adequate irrigation facilities and consistent price policy. However, the hypothesis of high instability in agriculture accompanied with high growth rate was established.

Singh and Mathur (1994)\textsuperscript{31} in their study “Growth and Instability in the Production and Price of Potato in India” found that the production of potato increased rapidly mainly due to the significantly high growth of area in the major growing states, yield also showed a rising trend but its growth was low in some states. Hence, there is a need to raise the yield by the use of improved seeds and package of practices as recommended by the extension organizations of the regions. Besides, the better infrastructural facilities such as irrigation water, marketing and storage should be provided to the potato growers in the identified states. Results further revealed that the production of potato was unstable in nature particular in the states where the production increased at a fast pace due to adoption of modern production
technology which led to instability in production. The area under potato was more unstable than yield in some of the states.

Damodar Reddy, N (1996)\(^{32}\) found that the traditional agricultural of the district was capable of dynamic growth impulses in respect of the traditional crops. He found that there is no clear evidence for intensified adoption of HYV seeds in the selected crops and also for the impact of HYV seeds on the productivity of selected crops in Mahaboobnagar District.

Narayana, B (1996)\(^{33}\) identified the impact of the Oilseeds Technology Mission (1986) on Groundnut, Castor and Sesamum. Though a high growth was observed, during the post-oil seeds technology period, all the districts in the state have not registered the same. He also found that the extent of instability in all the districts in the state is not very high during the pre-oilseeds technology period. His study concluded that the growth and extent of instability in area, production and yield of oilseeds differ from district to district and within a district from crop to crop implying uneven adoption of oilseeds technology.

Pochanna, K (2000)\(^{34}\) has observed that the association between yield growth and instability shows a negative direction at national and in most of states. He observed the positive association between yield growth and instability in Punjab, Haryana, Andhra Pradesh, Karnataka,
Orissa and West Bengal. He found that the use of Fertilizers and spread of irrigation facilities are important factors not only to yield growth but also to reduce the fluctuations and ensure stability in the yield growth.

Narayan (2001)\textsuperscript{35} examined the role of credit on the nature of land leasing decision under alternative tenurial contracts in a disaggregated manner. It was postulated in the study that large farmers are more likely to enter into rental contracts and would therefore be less likely to lease in land if they are credit constrained while the marginal or small farmers would lease more land under sharecropping contracts if they were credit constrained. Empirically the proposition was verified and it was found that credit has a positive impact on land leasing decision for small farmers and a negative impact for large farmers.

Rao C. H. (2001)\textsuperscript{36} tried to study the impact of World Trade Organisation (WTO) on viability of Indian agriculture in which, he explain the main rationality of introduction of WTO and whether Indian agriculture reaped the benefits in the post globalisation period. He argued that India could not exploit the trading opportunities with comparative cost advantage is due to high domestic support, export subsidies and denial of market access through various tariff and non-tariff barriers in the developed countries. The major challenge to the viability of agriculture of India is posed by the shortfalls in public investment and in the provision of agricultural services account for the
failure of agricultural supplies to respond to the favourable incentive framework created by macroeconomic reforms, including trade liberalisation, in the 1990s. India was major exporter of food grain in the world but due to the unfavourable terms of trade exports have come down and finally, the price fall in the international market has significantly affected whole farming community.

An analysis of productivity of the crop sector in the Indo-Gangetic Plains (IGP) by Kumar et al. (2004)\textsuperscript{37} has revealed that the Total Factor Productivity Growth (TFPG) of the crop sector in the IGP had risen at the rate of 1.2 per cent per annum during the period 1980-81 to 1996-97. The TFP results for different agro-eco-regions have shown considerable variations. The Low-Gangetic Plain (LGP) region has depicted the highest growth in TFP (3.1 per cent) and Middle Gangetic (MGP), the lowest (0.37 per cent). The TFP growth rates were estimated at 1.4 per cent in the Trans-Gangetic Plain (TGP) and 0.9 per cent in the Upper-Gangetic Plains (UGP). In IGP, one-third of output growth was contributed by TFP. However, the contribution of TFP to output growth varied from as high as 57 per cent in the LGP to a meagre 17.3 per cent in the MGP. The shares of TFP in the output growth of the crop sector in the TGP and the UGP regions were observed to be 34 per cent and 26 per cent, respectively. The output growth in the UGP and the MGP was input-based, while in the LGP, it was technology-based. The output growth in the TGP was input- as well
as technology-based. The analysis has confirmed that contribution of TFPG to output growth had started declining and was, in fact, showing a tendency of further deterioration in the process. Productivity growth, which picked up during the early-1980s, could not sustain during 1990s and this situation raised an alarm for the policymakers and researchers of the country.

Chand and Kumar P (2004)\textsuperscript{38} studied impact of capital formation on Indian agriculture and it is found that growth in capital formation is significantly related with growth of agriculture. But capital formation in Indian agriculture has been either stagnating or falling since the beginning of 1980s but macro economic reforms further squeezed public investment, though there is rise in private investment that was not rising to meet the requirements.

Patnaik (2005)\textsuperscript{39} tried to identify changing agrarian situation after reforms. This study tries to explain how neo liberal policies introduced in the 1990’s affected peasant community by examining the fund allocation to the rural development from the Net National Product. Fund allocation to the rural development will result in improving irrigation, irrigation and other heads of agriculture and this fund allocation has come down from 4 per cent of NNP to 1.9 per cent of NNP by 2001-02. The study also explores the impact of liberalisation on food security and found out that shift in cropping pattern towards non food grains has led
to food security problem. Since advanced country markets were in recession and global primary product prices went into a steep tailspin with 40-50 per cent decline in unit dollar prices of all crops – cereals, cotton, jute, sugar, tea, coffee – and up to 80 per cent decline in some oil crops between 1995 and 2001. With a brief spike in 2002 most prices have continued to fall and some prices are today lower than as far back as 1986. This resulted in distress of farmers which had led to farmers committing suicides.

Vakulabharanam (2005) argues that the state had offered various input subsidies, especially in the provision of fertilizers, electricity and credit. It had provided infrastructural support (primarily in irrigation and electricity) and extension services to cultivators. It had also provided minimum support prices for agricultural output. The policies after 1990, unevenly withdraw this support to the farming community. The reduction of domestic support in terms of subsidy and credit on the one hand and drastic price fall of agricultural commodities in the international market on the other hand led to distress in the farming class.

Praduman Kumar and Surabhi Mittal (2006) in their scholarly article on “Agricultural Productivity Trends in India: Sustainability Issues” discussed the sustainability issue of the crop productivity is fast emerging. The post-Green Revolution phase is characterized by high
input-use and decelerating total factor productivity growth (TFPG). The agricultural productivity attained during the 1980s has not been sustained during the 1990s and has posed a challenge for the researchers to shift the production function upward by improving the technology index. It calls for an examination of issues related to the trends in the agricultural productivity, particularly with reference to individual crops grown in the major states of India. Temporal and spatial variations of TFPG for major crops of India have also been examined.

Suri (2006)\textsuperscript{42} argue that that agrarian distress is the result of the policies pursued by the governments over the years. Other factors such as changed cropping pattern due to a shift away from light crops to cash crops; liberalisation policies which prematurely pushed Indian agriculture into the global markets without a level playing field; heavy dependence on high-cost paid out inputs; growing costs of cultivation; volatility of crop output; market vagaries; lack of remunerative prices; indebtedness; neglect of agriculture by the government; decline of public investment have contributed further to agrarian crisis.

Galab and Reddy (2006)\textsuperscript{43} the authors precisely talked about the factors that caused crises in agriculture. They are technological factors, ecological, socio cultural and policy related factors. Extensive cultivation has led to decrease in fertility and productivity this is also because of intensive use of fertilisers, since the input intensity is increased in the
marginal farms the productivity fell down coupled with increasing cost of inputs, these factors ultimately led to decrease in profit margins. Ecological factors include decreasing quality of land and water resources due to intensive chemical and fertiliser use. Socio and cultural factors include the effects of globalisation and urban culture on villages had shown impact on health and education consciousness in the rural agrarian families, in order to get the access of better facilities farmers have changed their cropping pattern. Policy related factors like decrease in public investment from 4 per cent of agricultural GDP during 1980’s to 1.86 during early 2000.

Chand et al., (2007)$^{44}$ argues, the main factors which led to a slowdown in agriculture at national level after 1996-97 are: (a) decline in the area under cultivation, which seems to be a result of expanding urbanization and industrialisation, (b) deterioration in the terms of trade for agriculture, (c) stagnant crop intensity, (d) poor progress of irrigation and fertiliser, (e) Decline in supply of electricity to agriculture, and (f) slowdown in diversification.

Mishra Srijit (2007)$^{45}$ discussed the crisis in agriculture was well underway by the 1980s and economic reforms in the 1990s have only deepened it the major reasons brought out in the light of agricultural distress are vagaries of nature (primarily, inadequate or excessive water), lack of irrigation facilities, market related uncertainties such as
increasing input costs and output price shocks mainly commercial and plantation crops due to agricultural trade liberalisation, unavailability of credit from institutional sources or excessive reliance on informal sources with a greater interest burden and new technology among other.

Narayanamoorthy (2007)\textsuperscript{46} argues that fall in wheat and rice production is not due to technology fatigue rather due to extensive mono crop cultivation and high use of fertilizers and faulty agricultural pricing. Lack of allocation of funds to irrigation development after liberalisation during this period net area irrigated remained constant. This poor growth in surface irrigation has compelled farmers to rely heavily on groundwater irrigation. The increased dependence on groundwater irrigation increases the cost of cultivation and depletion of ground water resources and in addition to this credit unavailability for investment on inputs put farmer in further crisis.

Pillai (2007)\textsuperscript{47} in his, study he basically observed major aspects of the crisis and try to find out the reasons contributed for it. Study came up with the issues liberalisation, price volatility and weak domestic support in price policies and credit. The single most adverse effect of trade liberalisation has been the combination of low prices and output volatility for cash crops. While output volatility increased especially with new seeds and other inputs, the prices of most non-foodgrain crops
weakened, and some prices, such as those of cotton and oilseeds, plummeted for prolonged periods. This reflected not only domestic demand conditions but also the growing role played by international prices consequent upon greater integration with world markets. In addition to that, high volatility of output and lack of proper domestic price support and credit facility to invest in agriculture worsened the agrarian situation in the last part of 20th century.

Reddy and Mishra (2008)⁴⁸ Crisis in agriculture was well underway by the 1980s and economic reforms in the 1990s have only deepened it the major reasons brought out in the light of agricultural distress are vagaries of nature (primarily, inadequate or excessive water), lack of irrigation facilities, market related uncertainties such as increasing input costs and output price shocks mainly commercial and plantation crops due to agricultural trade liberalisation, unavailability of credit from institutional sources or excessive reliance on informal sources with a greater interest burden and new technology among other.

Dinesh K. Marothia (2009)⁴⁹ in his scholarly article on “Rainfed Agriculture” presented the Rapporteur’s Report followed by detailed discussion on the various issues spelt out in the Report for in depth deliberations. Based on the discussion and issues raised in the Rapporteur’s Report the participants arrived at the following
Conclusions:

1. The National Rainfed Area Authority (NRAA) has recently been established to coordinate all the on-going programmes of the different Ministries of Government of India. NRAA is currently facing the initial administrative and technical problems to co-ordinate with different ministries, organisations and institutions. To make NRAA effective it is important to designate it as a coordinating body on the line of a State Planning Board functioning in different states of the country. NRAA may be assigned the responsibility to develop resource based planning with detailed activity mapping of various schemes and programmes currently being implemented by the different ministries. Funds from various ministries to the States for various programmes pertaining to rain fed area development may be channelised through NRAA. The organisational structure of the NRAA may be developed horizontally and vertically right from state to village panchayat (preferably a cluster of panchayats in thinly populated areas) level. NRAA has also to prepare a base document regarding alternative mechanisms to design coordination paths for effective implementation of different programmes through NGOs, SHGs, PRIs, ICAR institutions, ICRISAT and other CGIAR institutions, SAUs, KVKs and different wings of the agriculture and rural development state departments.
2. NRAA has a multi-disciplinary team to develop comprehensive plans for rainfed agriculture development for different agro-climatic conditions of the country. The participants strongly felt that a full-time Senior Agricultural Economist needs to be inducted to provide input on the policy issues. The participants further emphasised that NRAA may develop a network with all the institutions and organisations who are working for the development of rainfed areas in the country and outside. The participants felt that individuals within these organisations and institutions can be identified for such activities.

3. The participants felt that NRAA should immediately prepare the inventory of technologies developed by SAUs, ICAR and other institutions in crop, livestock, fisheries, agro-forestry, horticulture and other sectors. The inventory of technologies can be further classified and assessed for different agro-climatic zones to ensure effective replication of the appropriate technologies. For example, drip irrigation, even without subsidy (with proper water and power pricing) can be an economical as well as socially and environmentally friendly technological intervention. Similarly, SRI can be promoted on a large scale with genetically potential varieties of paddy. Also, there are a large number of medicinal and aromatic rice varieties which are being grown under organic conditions and have comparative export advantage. However, R & D for developing protocols for the organic certification of crops, Non-Timber Forest Produce (NTFPs) and other enterprises can be intensified.
4. In most of the rainfed areas of the country a rich biodiversity is available with very vibrant and living traditional ecological knowledge. There is urgent need to synthesise the traditional ecological knowledge with the contemporary knowledge to transform rainfed areas. NRAA with other organisations that are working in reconciling the system of indigenous ecological knowledge with modern scientific knowledge can prepare a comprehensive document. Such document may help NRAA to design appropriate strategies for development of rainfed areas.

5. A large number of the policies pertaining to incentive structures, rural infrastructural development and life support system have been designed and implemented in the past in the rainfed areas. The group felt that most of these policies have been designed for the irrigated agriculture system and have little relevance for the rainfed agriculture. Also several policies have conflicting priorities. A hard look is required to reassess the relevance of these policies for the less favoured or disadvantageous or underprivileged regions of the country.

Reddy M.J.C., Shaik Haffis and Reddy Y.V.R.(2011) in their article entitled “Gender Disparities in Work and Wages in Agriculture: A Comparative Study of Andhra Pradesh and Orissa” attempts a comparative study of the two states: Andhra Pradesh and Orissa to measure gender disparities in work and wages in terms of relative time
men and women spent on productive activities and thereby, earned money wages out of them. Gender disparity in work registered more in Orissa than in Andhra Pradesh. A larger proportion of the time spent by women in the total time had gone into unpaid work as compared that in case of men in both the states. Women received lower wages than their male-counterparts in the two states. Gender disparity in wages was, found to be higher in Andhra Pradesh than in Orissa.

R. Maria Saleth (2011) in his paper entitled “Water Marketing in Agriculture” opines that for a monsoon-dependent country such as India, water scarcity has emerged as a major constraint for agricultural production, farm income, and rural employment. He says that local level water scarcity does motivate farmers not only to improve on-farm water use efficiency but also to evolve new and informal institutional arrangements for inter-farm water sharing. Specifically, his paper attempts to (a) provide an idea about the magnitude and vahse oi water trade, especially at the national level, (b) outline the technical and institutional environment within which Indian WMs are operating, (c) describe their major economic and institutional features, (d) evaluate their efficiency, equity, and sustainability implications and, (e) suggest the legal and institutional changes needed to make WMs an efficient institutional option for water management in India.
S. Ravichandran and V. Banumathy, (2011) in their article on A Study on Trend in Area, Production and Price Movement and Marketing Strategies of Chilli in Guntur District, Andhra Pradesh” says that India is the largest producer of chilli and contributes 25 per cent to total world production. In India, Chillies are grown in almost all the states across the length and breadth of the country. Andhra Pradesh is the largest producer of Chilli in India - contributes about 30 per cent to the total area and 51 per cent to the total production. The major chilly growing districts in Andhra Pradesh are Guntur, Warangal, Khammam, Krishna arid Prakasam. Guntur is the biggest Chilli market in Asia contributing 30-50 per cent to the total production of Andhra Pradesh. The present study was aimed to find the trend in area, production and price movement of chilli and marketing strategies of chilli in Guntur district, Andhra Pradesh. The sample size was fixed as 60 farmers, comprising 30 respondents from regulated and unregulated markets and the collected data were analysed by using simple percentage analysis, linear growth rate, regression analysis, seasonal price index, and Garret's ranking techniques. The trend line showed linear trend in chilli arrivals and prices and it also inferred that there is a decreasing trend in arrivals and increasing trend in prices. The average price index was high (109.35) in lean season and less in peak season which was 97. The analysis on marketing strategy of farmers found that majority of the marginal and small farmers rather than big farmers sold their produce.
immediately after drying and the farmers were having the practice of primary grading like removal of discoloured and damaged chilli. The respondents’ ranked cumbersome marketing procedure was the prime reason and ranked it as the first problem.

Saumya Chakrabarti, Anirban Kundu and Alok Kumar Nandi (2011) in their article on “Farm-Non-Farm Linkage in India: A Structuralist Perspective”, says that since the early 1970s it has been argued that the ‘Lewisian’ path of development is ineffective so far as broad based employment generation is concerned. Consequently, the focus has shifted towards the informal sector in general and rural non-farm employment (RNFE) in particular as potential candidate capable of creating widespread income and employment. RNFE is no more considered as a residual segment. They argued, instead of getting withered away through structural transformation, the RNF sector is rather acting as a dispersed development engine. In fact, we witness a paradigm shift.

Rabindra KR Chowdary (2011) in his article on “Agricultural Development in Assam” estimates that in Assam rice has registered a record production in 2010-11 at 50.86 lakh tonnes which marks a 15.4 per cent growth over the previous year and which accounts for more than 5 per cent of the country’s total rice production. But, he regrets that basically an agro-based economy, Assam, the largest state of
north-eastern region has remained poor because of agricultural backwardness, in the main. The very fact that Assam has to feed 2.6 per cent of India’s population with 1.4 per cent of national income shows what development distance the state has to cover to catch up with the rest of the country. Even the other seven states of northeastern region stand on better footing since they together earn 1.3 per cent of national income to feed 1.2 per cent of the country’s population. The per capita income distance of Assam from all India per capita at current prices registered an increase from Rs.757 in 1989-99 to Rs.3599 in 1990-2000 and onward to Rs.20,250 in 2009-10.

Manikandan A.D. (2011)\textsuperscript{55} in his article on “Application of the NREGS in the Food Crop Sector for Improving Food Security in Kerala: A Theoretical Analysis” considers that Kerala has a long history of food grain deficit, especially in rice. For instance, deficit in rice has increased steadily in the state from 45 per cent to 85 per cent between 1957 and 2008. However, there is no enough attention has been given to mitigate food insecurity problem in the state in a context there has been a large scale decline in the area and production of paddy. This paper gives a theoretical analysis on the application of the NREGS in agricultural sector of Kerala, especially in food crop sector in order to minimize labour cost of production in the paddy field. This is because labor cost of production of paddy is too high in Kerala compared to other states in India. Recent studies show that 60-70 per cent of the total cost of
production of paddy is labor cost. In order to mitigate higher labour cost of production of farmers we argue that the need for the introduction of the NREGS in food crop sector, especially in small and marginal paddy land owned by vulnerable sections like SCs/STs, and women. Hence, farmers can reduce the cost of labor in the production process considerably. As a result, net return of farmers will increase due to increased competitiveness. In addition to this, we can improve not only food security by enhancing supply of food and but also bio-diversity and eco-system in the state. In sum, the intervention of the NREGS in the small and marginal paddy land is nothing but giving the unskilled agricultural labourers to farmers in ‘zero’ wage.

Bhanumathy V. and Ravichandran S. (2011) in his article entitled “Developing Public Private Partnership Through Contract Farming - A Case Study of Gloriosa Superba Cultivation in Jeyankondam Block of Tamil Nadu” considered that the contract farming system forms the most heartening part of the vision of the National Agricultural Policy 2000, envisages that, private sector participation will be promoted through contract farming and land leasing arrangements to allow accelerated technology transfer, capital inflow and assured markets for crop products, especially of oilseeds, cotton and horticultural crops. Gloriosa superba is an important medicinal plant of Asia and Africa. They says that it is a source of colchicines and colchicocides, which are very costly, being, highly demanded by
pharma industries. The study attempted to analyse the economics of Gloriosa superba which is cultivated under contract farming in Jeyankondam block of Ariyalur district, Tamil Nadu. The results showed that the total cost of cultivation per acre was Rs. 161912. Among the components of cost, cost of tubers occupied the first place. The gross income was Rs.375000, out of which, Rs.200000 through selling of seeds and Rs.175000 was from selling of tubers. The net return per acre was Rs. 252900 and the benefit cost ratio was 1: 2.32. Decaying of tubers due to heavy rainfall was ranked first followed by skin allergy. Since the production of G. superba is highly profitable to the farmers, the government has to take steps to establish storage godowns at farm/taluk level in order to minimize the decay of tubers and 1055 to the farmers.

Sandip Das (2011) in his scholarly article on “Agricultural Products Exports in India” says that for boosting agricultural products exports further, the government’s thrust is on Good Agricultural Practice standard for ensuring that Indian food products are accepted by consumers across the supermarket in Europe, USA and other developing countries. He recollects that, realizing the importance of high value food products exports from the country, the government back in 1985 had set up a specialized body - Agricultural and Processed Food Products Export Development Authority (APEDA) through an Act of Parliament which functions under the commerce ministry. In the initial
years, the focus was to support the exporters in areas of marketing and packaging and training and identify key thrust areas for exports. Some of the key areas identified were meat, fruits and vegetables, basmati rice, guar gum etc. Since mid-1990s, with WTO regime and globalization, issues such as phytosanitary or sanitary norms, market access, non-tariff barrier become quite prevalent in the global trade. Besides, Hazard Analysis Critical Control Point (HCCP) also became quite prevalent in global market which concerns food safety.

Anjani Kumar, Praduman Kumar and Alakh N. Sharma (2012) in their paper on “Rural Poverty and Agricultural Growth in India: Implications for the Twelfth Five Year Plan” considers that the poverty alleviation has been an overarching goal of India’s development efforts since its Independence. In pursuing this objective, the planning process in the country has devised several interventions, often successful but sometimes overlapping. The Government of India, deeply concerned with widespread poverty, has implemented several anti-poverty schemes. These schemes have given thrust on creating adequate livelihood opportunities for the marginalised segments of the population, provisioning of public services and goods for improving standard and quality of life, strengthening of institutions and delivery mechanisms to empower the poor, and targeted development of backward regions through resource transfers and supportive policy measures. To ensure inclusive growth, the emphasis on having a more desirable composition
of Gross Domestic Product (GDP) growth by targeting an average 4 per cent per annum growth in AgGDP has found favour with the policy makers in the country’s Eleventh Five Year Plan.

Yoginder K. Alagh (2011) in his paper entitled “Agriculture in a Rural-Urban Continuum” discussed the demand for Indian agriculture and the spread of markets. Our argument is that Indian agriculture should be seen as a rural-urban continuum and opportunities perceived accordingly. We have been arguing for some time that urbanisation and structural change in the labour force is taking place at a faster pace than usually argued. The underlying long term trends, however are in terms of growth of agricultural demand and diversification of the demand basket with non-foodgrains growing faster than grains and non-crop based agriculture like animal husbandry growing even faster.

Mukesh Kumar (2011) in his article on “Trends in Indian Agricultural Production in Pre and Post Reform Period” analysed the growth, special pattern and find out the determinants of food grain production in India. For this purpose, both types of data i.e., time series and cross sectionals, data were taken. The foregoing analysis clearly indicates that the performance of India in foodgrain production has been better than the pre reform period but not sustain. The ACGR of rice, wheat, coarse cereals, pulses, as well as total has decreased from 2.65, 3.51, 1.37, 0.90, and 2.51 in pre freeform period to 1.03, 1.14, 0.77, 0.05 and 0.96 per cent respectively post reform period in India.
Mohan Reddy K., Vara Prasad M. and Ugandhar K. (2011)\textsuperscript{61} in their essay on “Economic Reforms and Indian Agriculture - An Analytical Note” considers that the performance of agriculture sector in the country in the recent years has turned out to be quite dissatisfactory due to of sharp deceleration in growth rate of agricultural output. There are apprehensions that high growth rate in non agriculture sector alone would not help India to realise high growth rate in total economy if agriculture continues to remain in low growth trap. The present paper is aimed at to analyse the current status of Indian agriculture in the arena of economic reforms. This study is primarily based on the secondary data collected from the reports of the National Accounts Statistics (NAS), Central Statistical Organisation (CSO), Statistical outline of India and various issues of Economic Survey. From the catalysis it can be concluded that the total GDP, GDP of agriculture and allied, GDP of agriculture alone, GDP of fishery and GDP of non-agriculture during the post-reform period had accelerated. But this tendency had been disturbed during 1996-97 to 2004-2005. It had also been observed that during the early years of reforms, gap in the growth rate between agriculture and nonagricultural slightly narrowed down. But again during the latter years of reforms i.e. from 1996-97 to 2004-05 the gap between them had widened. Further, it had also observed that the public sector capital formation in agriculture as a proportion of total capital formation in agriculture declined in the recent past as compared
to the 1980s. Thus, the authors were of the view that there is a need to reverse this trend and increase public investment in agriculture so as to be able to increase the growth in this sector.

Jayanad V.Hatti (2011) in his article on “Cotton Growing Farmers and their Problems: A Case Study” analysed that the cotton is the major crop in the sample villages. The farmers preferred the cotton due to its suitability to rain fed situation and its high yield. The average cotton yield is highest at 8.40 quintals/acre that is much higher than state average yield of cotton. In the sample villages cost item in material cost which reveals that the farmers using fertilizer extensively. In the production of cotton the cotton picking activity consumed nearly 1/3rd of the total labour of cotton cultivation. With regard to marketing cost, commission and marketing fee is major cost item. Majority of the medium/large farmers sell cotton in the APMC’S, which it indicates that they have holding capacity, compared to other categories of farmers.

Radhika Rani Ch., et.al. (2011) in their essay on “Climate Change and Rainfed Agriculture: Rural Development Perspectives” observed that erratic monsoon precipitation would adversely affect the lives of majority of population of this region. With the productivity of irrigated lands reaching a plateau, maintaining the food grain production of pace with the increasing population is a real challenge. However, in the present context, the scope for horizontal expansion of agriculture is
almost nil as it is already extended to marginal lands. Protagonists of climate change argue that promotion of conventional agriculture of augment the vertical expansion will further deteriorate climate in the form of increase in global emissions through various activities of agriculture which is already held responsible for 18 per cent of global gas emissions. Hence, only vertical expansion that has to come mainly from rainfed region with sustainable and eco-friendly agriculture practices which are seen as sink for GHG emissions is the option left to make the production viable and to meet the food security in long run. Therefore, the paper attempts to understand the impact of climate change on agriculture, with particular reference to rainfed agriculture, present policy scenario and the strategies to be adopted with in-built climate change mitigation measures, in the context of rural development.

Sudhakar Dwivedi, Pawan Sharma and Anil Bhat (2011) in their scholarly article on “An Analytical Study of Capital Formation in India: With Special Reference to Indian Agriculture” says that an increase in the stock of capital in a fixed period is known as capital formation of an economy. The capital formation depends upon three factors- formation of savings, mobilization of savings and investment. Agriculture sector still dominates the Indian economic scene by providing livelihood to majority of the population. In most of the developing countries including India, agricultural development is a precondition for economic
development. Capital formation is one of the basic factors for increasing production. This is all the more important in the agricultural sector where we are faced with the task of increasing production to keep pace with the increase in population against the odd of the vagaries of monsoon. The judicious use of natural resources for sustainable production of agriculture, adoption of advanced technology and development of infrastructure for facilitating all agriculture activities, ensuring food security in the broader sense of making adequate nutritious food available and accessible to all and making agriculture a profitable activity at par with other industries in the sphere of global economy are the problems that can be successfully tackled only with a strong capital base. This requires a close monitoring of the status of capital formation which is turn things on the nature of statistical system and quality of data available for measurement of capital formation. The share of agriculture in GDP has registered a steady decline from 18.6 per cent in 2004-05 14.6 per cent in 2009-10 at 2004-05 prices). The declining share of agricultural sector in the GDP is a characteristic of all developing economics. The Gross Capital Formation (GCF) in agriculture sector relative to GDP in this sector has an increasing trend from 15.8 per cent in 2005-06 to 21.3 per cent in 2008-09.

Biswanath Goldar, Devender Pratap, Yashobanta Parida, (2012) in their article on “Impact of Tariff Reduction according to Doha Modalities on India's Trade of Agricultural Products” attempts to
estimate how India’s trade in agricultural products will be affected by tariff reductions according to the tiered formula of the 2008 draft modalities in the Doha round of the World Trade Organisation. The estimates indicate that the reductions in agricultural tariff rates will lead to an increase in India’s imports of agricultural products by about 1 per cent and an increase in its exports of agricultural products to the us and us markets by about 2 per cent to 4 per cent. India has probably more to gain from the implementation of tariff cuts according to the tiered formula than to lose from it. However, the overall effect of the tariff cuts on India’s agricultural exports and domestic agricultural production would be small. They assess the increase in India’s import and export of agricultural products to and from markets in the United States (US) and European Union (EU) where such likelihood exists, provided the tiered formula of tariff reduction given in the Revised Draft Modalities for Agriculture is applied.

Venkata Naidu G.and Ramappa P. (2012) in their scholarly article on “Problems and Prospects of Dry land Farming” estimates that Dry land agriculture is spread over 6510 million hectares in about 48 countries of the world. About 60 per cent of land under rainfed is in developing countries. India ranks first among the dry land agricultural countries in terms of both extent and value of produce. The study reveals that the dry land agriculture is not at all remunerative in the district. To overcome all these social and economic problems of
agriculturists, the Government should undertake long term policies like integration of rivers by solving inter-state water disputes and provide employment. Otherwise farming community in the district may not continue in agriculture.

Govindaraju M.S., Raju Gowda H.N. and G.B. Panduranga Naik (2012)\textsuperscript{67} in their essay on “Agrarian Crisis, Farmers' Suicides in India: Trends and Issues” says that the failure of stopping farmers suicides speaks failure of previous packages declared either by state government or central government. They criticized that many of the government sponsored packages have not brought required rate of success. Hence, they suggest that the government should act quickly to declare income generation programmes. Instead of declaring compensation to the families who committed suicide, assistance in the form of providing employment should be started on the merit of each case. Effective water management techniques should be popularized so that effective water management of the scarce water is done effectively.

Gupta Parameswara E.A. and Roshan (2012)\textsuperscript{68} in the paper on “Poverty, Farmers' Suicide and Alleviation Programmes” considers that though there is a decline in the poverty ratio in India but it is painful to accept 26 crores of people are still under the poverty line. The major contributing factor for the unsuitability of poverty alleviation programmes include, absence of people’s participation, lack of good governance, weak linkage between programmes. The paper is classified in three sections, Sec-I deals with poverty and farmers
suicides, causes and consequences and Sec-II deals with poverty measurement and Sec-III finally reviews all the poverty alleviation programmes. They strongly recommended that income generating activities among the farmers may reduce the rate of hike in farmer's suicide.

Hanumanthappa K. (2012) in his article on “Poverty, Rural Indebtedness and Farm Distress: An Analysis” considers that despite lapse of 64 years, indebtedness among indebted household is increasing. Indebtedness may be one of the reasons for present agriculture distress. He further says that it is not the one and all reason. Increased commercial cultivation in the place of foods grain production commercialization of valuable agricultural land, disparity among release of funds for the development of backward districts are a few reasons that should be addressed properly by the planners for the future. Rural distress arises on account of various causes but indebtedness is one of the major cause and not one and all. Decrease in the growth of agriculture, neglect of designing development programmes and allocation of resources, and in Karnataka commercial crops are given prime importance over big prospects which are risky. The other reasons may be increase' in cost of inputs, credit not meeting the needs of agriculturists, and ignoring rural allocation of resources to backward areas may be the other causes for the present distress. Against this background an honest attempt is made in understanding the present scenario of distress.
Dorge J.T., Yadav D.B. and Kadam S.A. (2012) in his paper on “Economics of Different Farming Systems in Western Maharashtra” elaborately discussed the conditions of farming community especially small and marginal farmers in Maharashtra. In Maharashtra, there are several farming systems viz; crop based, horticultural based, dairy based and their combinations. The profitability of different crop and livestock combination is varying from region to region and even within the region also. From amongst the existing farming systems, then which one is most profitable, therefore the present study was undertaken to examining the resource use efficiencies and productivities.

Dhurjati Mukherjee (2012) in his essay on “Second Green Revolution: Eastern States to Lead the Way” mentions that the first green revolution was limited to five crops with the main focus on wheat and was only limited to a few areas of the country, mainly Punjab, Haryana and Western Uttar Pradesh. The studies have revealed that the cost intensive green revolution helped mainly the rich farmers while the small and marginal farmers did not receive the desired benefits and their conditions showed a decline. He hopes that India can definitely emerge as an agricultural power in the not –too- distant future if a better strategy is implemented. There is an urgent need to overhaul socio-economic and farm policies to remove rural disparities and remove rural poverty or at least bring it down steadily.
References


