CHAPTER VI

SUMMARY OF FINDINGS AND CONCLUSION

6.1 Introduction

The growth and instability in foodgrains production in Tamil Nadu during the pre and post reform periods were systematically analyzed in the previous chapter. This chapter presents the main findings of the study and also suggests some policy measures.

6.2 GROWTH PERFORMANCE OF FOODGRAINS

6.2.1 Growth Performance of Paddy

- From the analysis it is found that the area under paddy in the state showed a negative growth rate during the pre and post reform periods. However, the growth rate of area under paddy in post-reform period (-1.18%) was comparatively better than the growth rate of pre-reform period (-3.14%).

- It is also found that the growth rate of Paddy cultivated area in the post-reform period was comparatively better than the pre-reform period in Chengalpattu, South Arcot, North Arcot, Salem, Coimbatore, Tiruchirappalli, Pudukkottai, Thanjavur, Ramanathapuram and Tirunelveli districts.

- The state level paddy production showed a positive growth rate during the pre-reform period (2.07%) and overall period (0.26%), while post-reform period showed a negative growth rate of -1.68 per cent per annum. During the pre-reform period the highest growth rate was found in Pudukkottai district (5.11%), while Coimbatore district showed a very low growth rate (-2.71%).

- It is also very clear from the analysis that during the post-reform period, all the districts in Tamil Nadu showed negative growth rate in Paddy production.

- It is also interesting to note that the growth rate of Paddy production in North Arcot district was comparatively better in the post-reform period (-0.14%) than the pre-reform period (-1.58%).
The state level Paddy yield had shown a positive growth rate during the pre-reform period (5.38%), while the post-reform period showed a negative growth rate (-0.51%). During the pre-reform period, all districts were showed a positive growth rate in Paddy yield and the highest growth was found in Pudukkottai district (8.72%).

The district wise analysis of Paddy yield during the post-reform period shows that the following districts registered a negative growth rate: South Arcot, Coimbatore, Pudukkottai and Thanjavur. Among the districts which were showing positive growth rate during the post-reform period, the growth rate of Nilgiri district was high (3.29%) and the remaining districts recorded only meager growth of less than one per cent per annum.

It is concluded that New Economic Policy introduced in 1991 has made no positive contribution towards Paddy cultivation in Tamil Nadu.

6.2.2 Growth Performance of Cholam

The area under Cholam cultivation in Tamil Nadu had shown a positive growth of 0.89 per cent during the pre-reform period. During the post-reform period the area under Cholam showed a negative growth rate (-3.24).

During the pre-reform period, the growth rate in the area under Cholam is positive in very few districts such as Pudukkottai, Tiruchirappalli, Periyar, Ramanathapuram and Coimbatore. But the remaining districts had revealed a negative growth rate.

It is also interesting to note that the growth rate of area under Cholam in Chengalpattu, Salem, Dharmapuri, Ramanathapuram and Tirunelveli districts was comparatively better in the post-reform period than the pre-reform period.

According to the results, it is clear that the growth rate of Cholam production in Tamil Nadu was positive during the pre-reform period. Whereas the growth rate of Cholam production in the post-reform period has been comparatively lesser than the previous period and also negative.

It is important to note that there is no district which had registered a positive growth rate, except Ramanathapuram in terms of Cholam production during the
post-reform period. The positive growth rate had been registered in Ramanathapuram district is also very meager (0.38%).

- It is also that, the yield of Cholam in Tamil Nadu had been recorded a positive growth rate of 3.79 per cent during the pre-reform period. But during the post-reform period, Cholam yield witnessed a negative growth rate of -1.13 per cent.

- From the analysis, it could be seen that, during the pre-reform period, the growth rate in Cholam yield is positive in all districts except Coimbatore district. During the post-reform period, the growth rate in Cholam yield is positive in very few districts such as Pudukkottai, Tiruchirappalli, Periyar, Ramanathapuram and Coimbatore.

- The growth rate of yield of Cholam in Periyar district during the post-reform period (6.69%) had been comparatively higher than the previous period (4.67%) whereas the growth rate of yield of Cholam in all other districts during the post-reform period had been comparatively lesser than the previous period.

6.2.3 Growth Performance of Cumbu

- The growth rate of Cumbu cultivated area in the state shows a negative growth rate (-2.54% and -9.79%) during the pre and post reform periods respectively. During the pre-reform period, South Arcot and Madurai districts showed a positive growth rate and the remaining all other districts showed a negative growth rate. However, during the post-reform period, no district had registered a positive growth rate in Cumbu cultivation area.

- The growth rate of area under Cumbu in Chengalpattu and Coimbatore districts during the post-reform period had been comparatively better than the previous period.

- It is understood that the Cumbu production had showed a meager positive growth rate (0.69%) during the pre-reform period, at the state level. However, it is turned to negative (-6.56%) during the post-reform period.

- It is found from the district wise analysis during the pre-reform period, Madurai district registered the highest growth rate (6.76%) in Cumbu production, whereas during the post-reform period, all districts registered a negative growth rate in Cumbu production.
The growth rate of Cumbu production in Chengalpattu, Coimbatore and Ramanathapuram districts during the post-reform period had been comparatively better than the previous period, whereas the growth rate of Cumbu production in all other districts during the post-reform period had been comparatively lesser than the previous period.

The state level Cumbu yield shows a positive growth rate in both the pre and post reform periods. However, it is comparatively lower in post-reform period (1.4%) than the pre-reform period (3.13%).

During the pre-reform period, the district wise analysis revealed that a remarkable growth rate in Cumbu yield was observed in Salem district (9.77%) followed by Madurai (5.53%) and Tirunelveli districts (5.53%). It is important to note from the analysis that there is no district which had registered a negative growth rate, except Periyar in terms of Cumbu yield during the pre-reform period.

Considering the post-reform period Ramanathapuram district registered the highest growth rate (4.99%) than all other districts.

The growth rate of Cumbu yield in Coimbatore, Periyar and Ramanathapuram districts during the post-reform period had been comparatively better than the pre-reform period, whereas the growth rate of Cumbu production in all other districts during the post-reform period had been comparatively lesser than the previous period.

6.2.4 Growth Performance of Ragi

It could be observed from the analysis that, the growth rate of Ragi cultivated area showed a negative growth rate during pre-reform period (-4.33%) and post-reform period (-3.28%). But it is comparatively better in the post-reform period than the previous period.

The district wise analysis showed that all the districts depicted negative growth rate in pre-reform period as well as in the post-reform period. However, the growth rate of area under Ragi in North Arcot, Dharmapuri and Coimbatore districts during the post-reform period had been comparatively better than the pre-reform period, whereas the growth rate of area under Ragi in all other districts during the post-reform period had been comparatively lesser than the previous period.
The results clearly shows that, Ragi production projected positive growth rate in the pre-reform period (0.65%) and it turned negative during the post-reform period (-3.77%) at the state level.

In the pre-reform period, the district wise analysis revealed that a remarkable growth rate in Ragi production in Pudukkottai district (10.84%), followed by Dharmapuri (6.25%), North Arcot (4.15%) and Salem districts (2.57%). Apart from these four districts, all other districts witnessed a negative growth rate in Ragi production.

During the post-reform period, all the districts had evaluated a negative growth rate in Ragi production.

Ragi yield had estimated a positive growth rate during the pre-reform period (3.39%) and negative growth rate in the post-reform period (-0.65%) at state level. But there was a negative growth rate observed in the post-reform period was very meager.

In the pre-reform period only two districts (Periyar -1.38% and Tiruchirappalli -0.87%) registered a negative growth rate in Ragi yield and remaining all the districts exhibited positive growth rate.

In the post-reform period, most of the districts showed meager growth rate in Ragi yield, and some of them witnessed negative growth rate in Ragi yield. At the same time some districts had registered improved performance in their yield growth rate, notable among them was Chengalpattu district. During the second period, Chengalpattu district registered a positive growth rate of 2.5 per cent, while it was only 0.79 per cent in the first period.

### 6.2.5 Growth Performance of Maize

The area under Maize cultivation in Tamil Nadu exhibited a positive growth rate of 3.94 per cent in the pre-reform period. On the other hand, area under Maize in the post-reform period had shown a much improved growth rate of 13.74 per cent.
The district wise analysis revealed that, Madurai (40.48%) and Salem districts (29.43%) witnessed a remarkable growth rate in Maize cultivated area in the pre-reform period. During the post-reform period the performance of Tiruchirapalli (55.18%) and Pudukkottai districts (34.59%) is a notable one.

The growth rate of Maize production was 7.29 per cent during the pre-reform period, in the state level, whereas, during the post-reform period, the growth rate of Maize production was increased to 18.8 per cent.

During the pre-reform period, Madurai district (47.77%) registered a higher growth rate in Maize production. Whereas, Tiruchirappalli district (58.99%) registered higher growth rate in the post-reform period.

Maize yield had shown a positive growth rate of 6.25 per cent. In the case of post-reform period, the growth rate of Maize yield projected a slighter decline as compared to the previous period.

From the district wise analysis, it is clear that, Thanjavur district exhibited the highest growth rate of Maize yield and Coimbatore district showed the lowest growth rate, during the pre-reform period.

During the post-reform period, all the districts estimated a positive growth rate in Maize yield. Coimbatore district showed the highest growth rate of 9.17 per cent among the others.

6.3 INSTABILITY IN FOODGRAINS PRODUCTION

6.3.1 Instability in Paddy Cultivation

The magnitude of instability at state level in the area under Paddy was decreased (12.07) during the post-reform period than the pre-reform period (14.72). The district level instability in South Arcot, North Arcot, Tiruchirappalli, Pudukkottai, Thanjavur, Ramanathapuram and Tirunelveli witnessed a decline in instability during the post-reform period than the pre-reform period.

The coefficient of variation of Paddy production in Tamil Nadu during the post-reform period has registered a very high instability than the pre-reform period. It could be observed from the district wise analysis that the instability of
Paddy production in Salem, Dharmapuri, Coimbatore, Periyar, Tiruchirappalli, Thanjavur, Madurai, Ramanathapuram and Nilgiris districts were found to be more in the post-reform period than pre-reform period.

- It is also understood that the instability in Paddy production in South Arcot, North Arcot, Pudukkottai, Tirunelveli and Kanniyakumari districts were lower in the Post-reform period than the pre-reform period.

- As far as the yield of paddy in Tamil Nadu is concerned, the coefficient of variation is lower in post-reform period (13.04%) than the pre-reform period (21.3%). It is clear from the analysis that the instability in Chengalpattu, South Arcot, North Arcot, Salem, Dharmapuri, Coimbatore, Periyar, Tiruchirappalli, Pudukkottai, Madurai, Tirunelveli and Kanniyakumari districts were very high in the pre-reform period, whereas, it was arrested and reduced in a considerable manner during the post-reform period.

6.3.2 Instability in Cholam Cultivation

- The instability in Cholam cultivated area wise at the state level was increased to 22.42 per cent in the post-reform period from 11.33 per cent during the pre-reform period. At the same time, it was almost the same in both the pre and post reform periods in the Coimbatore district.

- It could be observed from the district wise analysis that the instability of Cholam cultivated area wise in Tirunelveli district was declined to 13.62 per cent in the post-reform period from 19.06 per cent during pre-reform period. The remaining all other districts showed an increase in their instability during the post-reform period as compared to the previous period.

- It is evident from the analysis that the instability in Cholam production at the state level during the pre-reform period (18.76%) was comparatively lower than the post-reform period (32.11%). At the same time, it was almost the same in both the pre and post reform periods in the Ramanathapuram district. The remaining all other districts showed an increase in their instability of production during the post-reform period as compared with the previous period.
The magnitude of instability in Cholam yield at state level was decreased in the post-period (15.79%) relative from pre-reform period (19.38%). The district wise instability estimation depicted that the South Arcot district witnessed a declined in instability during the post-reform period as compared with the pre-reform period.

6.3.3 Instability in Cumbu Cultivation

- It could be observed from the analysis that the coefficient of variation was found to be higher in the state during the post-reform period than the pre-reform period. It is also very clear from the district wise analysis that similar picture was witnessed in all the districts of Tamil Nadu.

- The coefficient of variation of Cumbu production in Tamil Nadu during the post-reform period was much higher than the pre-reform period. It could be observed from the district wise analysis that the instability of Cumbu production in Madurai district was found to be less in post-reform period. It is also very clear that the instability in Cumbu production in all the districts were higher in the Post-reform period than the pre-reform period.

- The magnitude of instability at state level in the Cumbu yield was almost stable in both the periods. The estimation of district wise instability have been showed in three districts namely North Arcot, Salem and Tirunelveli witnessed a decline in instability during the post-reform period as compared with the pre-reform period. At the same time, Chengalpattu, South Arcot, Dharmapuri, Coimbatore, Periyar, Madurai and Ramanathapuram districts had shown an increase in instability during the post-reform period. The instability in Cumbu yield was almost stable in both the periods in Tiruchirappalli district.

6.3.4 Instability in Ragi Cultivation

- The coefficient of variations in area wise Ragi cultivation in Tamil Nadu during the post-reform period was much higher than the pre-reform period. It is also very clear that the instability in area wise Ragi cultivation in all the districts were higher in the Post-reform period than the pre-reform period. The instability in Ragi cultivated area was almost stable in both the periods in Dharmapuri district.
The coefficient of variations of Ragi production in Tamil Nadu during the post-reform period was much higher than the pre-reform period. It could be observed from the district wise analysis that the instability of Ragi production in Dharmapuri district was found to be less in post-reform period.

It is also found that the instability in Ragi production in all the districts were higher in Post-reform period than pre-reform period.

As far the yield of Ragi in the state level is concerned, the coefficient of variation was little bit lower in post-reform period (14.56%) than the pre-reform period (17.32%). At the district level, North Arcot, Salem, Dharmapuri and Pudukkottai districts witnessed for considerable decline in instability during the post-reform period. At the same time, the instability of Ragi yield was almost stable in both the periods in the Tiruchirappalli district.

6.3.5. Instability in Maize Cultivation

The results of the analysis showed that the coefficient of variation in Maize cultivated area in Tamil Nadu for post-reform period was much higher than the pre-reform period. It could be observed from the district wise analysis that there was a decline in instability of Maize cultivated area in North Arcot, Dharmapuri, Coimbatore, and Madurai districts during the post-reform period than the pre-reform period.

As far as the production of Maize in Tamil Nadu is concerned, the coefficient variation was much higher in post-reform period (115.69%) than the pre-reform period (29.38%). At the district level, Dharmapuri and Madurai districts witnessed a decline in instability during the post-reform period. Apart from the Dharmapuri and Madurai districts, all other districts observed a huge increase in the instability.

It is worth noting from the results that the coefficient of variations of Maize yield in Tamil Nadu for post-reform period was almost doubled from the pre-reform period. It is also clear that the instability of Maize yield in all the districts were higher in the Post-reform period than the pre-reform period.
6.4 COMPONENTS OF CHANGE IN AVERAGE PRODUCTION OF FOODGRAINS

6.4.1 Components of Change in Average Production of Paddy

- It is clear from the results that, Kanniyakumari, Periyar, Madurai, Tirunelveli, Chengalpattu, Ramanathapuram, North Arcot, Pudukkottai, Tiruchirappalli, South Arcot, Salem and Dharmapuri districts showed a positive change in mean yield, while the negative change in mean yield showed in Nilgiris (-2085.57%), Thanjavur (-34.35%) and Coimbatore (-18.46%) districts.

- The Nilgiris, Thanjavur, Coimbatore, Dharmapuri, South Arcot and Salem districts showed the positive change in mean area, whereas, there was a negative change in mean area in the remaining districts.

- The positive contribution was observed from interaction between mean area and yield of Paddy in the Nilgiris (1039.39%), Dharmapuri (11.97%), Coimbatore (9.71%), Thanjavur (2.78%), South Arcot (2.55%) and Salem (2.25%) districts, while the other districts are witnessed to negative contribution from interaction between mean area and yield.

- For the state as a whole, change in mean yield (180.19%) and Change in area-yield covariance (6.07%) was positive. The change in mean area (-70.04%) and the interaction between change in mean yield and area (-16.22%) was observed as negative.

6.4.2 Components of Change in Average Production of Cholam

- It is observed from the analysis that, Coimbatore, Tiruchirappalli, South Arcot, North Arcot and Pudukkottai districts were showed a positive change in mean yield at the same time the remaining districts were showed a negative change in the mean yield.

- The change in mean area was positive in all the 12 districts of Tamil Nadu and the same was very high in Salem district (2879.54%).

- It is observed that there was a positive change in the interaction between changes in mean yield and area in Salem (2245.33%), Periyar (103.27%), Chengalpattu (39.16%),
Ramanathapuram (23.69%), Madurai (19.81%), Tirunelveli (14.8%) and Dharmapuri (9.6%) districts. However, the remaining districts showed a negative change in the interaction between changes in mean yield and area.

- For the state as a whole, change in mean yield (-3.45%) and Change in area-yield covariance (-0.16%) was negative. The change in mean area (102.04%) and the interaction between change in mean yield and area (1.57%) was observed as positive.

6.4.3 Components of Change in Average Production of Cumbu

- It is found that, all the districts except South Arcot (7.15%) and Tiruchirappalli (5.07%), witnessed a negative change in mean yield of Cumbu and the change in mean area was the main contributor for the changes in average production of Cumbu in all districts of Tamil Nadu.

- It is also observed that the interaction between changes in mean yield and area was positive for all the districts except Tiruchirappalli (-3.64%) and South Arcot (-2.92%) districts. The change in area-yield covariance of Cumbu was positive in Ramanathapuram (13.54%), Madurai (12.18%), Salem (3.69%), Periyar (0.55%) and Chengalpattu (0.13%), districts, while the same was negative in other districts.

- The average production of Cumbu for the state as a whole was predominantly due to change in mean area (127.69%), followed by interaction between changes in mean yield and area (37.41%) and change in area-yield covariance (0.52%). The change in mean yield was negative (-65.62%) in Tamil Nadu.

6.4.4 Components of Change in Average Production of Ragi

- It is found that, Salem, Chengalpattu, Pudukkottai, Tiruchirappalli, Tirunelveli, Thanjavur, Ramanathapuram, Madurai and South Arcot districts showed a negative change in the mean yield, while the same was positive in North Arcot (394.68%), Dharmapuri (307.34%), Periyar (33.59%) and Coimbatore (19.43%) districts.

- The change in mean area was positive and the same was the predominant component for changes in average Ragi production in all the districts of Tamil Nadu, except North Arcot (-297.93%) and Dharmapuri (-152.11%) districts.
The interaction between changes in mean yield and area of Ragi was negative in North Arcot (-46.31%), Dharmapuri (-42.27%), Coimbatore (-17.01%) and Periyar (-15.22%) districts, while the same was positive in other districts.

The change in area-yield covariance was negative in Dharmapuri (-12.96%), South Arcot (-1.93%), Chengalpattu (-1.71%), Madurai (-0.33%) and Tiruchirappalli (-0.14%) districts, while this was positive in other districts.

The average production of Ragi for the state as a whole was predominantly due to change in mean area (132.32%) followed by interaction between changes in mean yield and area (21.33%) and change in area-yield covariance (0.54%). The change in mean yield was negative (-54.19%) in Tamil Nadu.

6.4.5 Components of Change in Average Production of Maize

It is found from the results that, Pudukkottai, Dharmapuri and Thanjavur districts showed a negative change in mean yield, while positive change in mean yield showed in North Arcot, Coimbatore, Periyar, Madurai, Salem and Tiruchirappalli districts.

The change in the mean area and interaction between changes in mean yield and area was positive in all the districts. Pudukkottai district has registered the highest percentage in change in mean area (606.27%) and interaction between changes in mean yield and area (354.4%).

The change in area-yield covariance was negative in Pudukkottai (-261.65%), Thanjavur (-20.54%) and Tiruchirappalli (-1.64%) districts, and the same was positive in the remaining districts.

The average production of Maize for the state as a whole was predominantly due to change in mean area (63.95%) followed by interaction between changes in mean yield and area (26.28%) change in mean yield (6.11%) and change in area-yield covariance (3.66%).
6.5 COMPONENTS OF CHANGE IN THE VARIANCE OF PRODUCTION OF FOODGRAINS

6.5.1 Components of Change in the Variance of Production of Paddy

- The change in mean yield was found positive and very high in Tirunelveli district (801.89%) and negative in North Arcot district (-173.09%). It is observed that the change in mean area was found positive and very high in Kanniyakumari district (61.93%) and the same was negative in Tirunelveli district (-177.43%).

- Chengalpattu district registered the highest change in yield variance (163.73%) and North Arcot district registered the highest change in area variance (174.84%).

- It is also observed from the analysis that change in area-yield covariance was positive in all the districts except Tirunelveli (-258.48%) district.

- The variance in production of Paddy for the state as a whole was predominantly due to the change in area-yield covariance, change in mean yield, interaction between changes in mean area and yield and changes in area-yield covariance and change in area variance. The change in residual, interaction between changes in mean area and yield variance, and the change in mean area were observed negative.

6.5.2 Components of Change in the Variance of Production of Cholam

- It is very clear from the results that, the change in variance of Cholam production in Chengalpattu district was predominantly due to the change in residual factors and the impact of all other factors was very meager.

- In South Arcot district the change in variance of Cholam production was predominantly due to the change in mean area (74.01%) but in North Arcot district the production variance is mainly due to change in area variance (111.47%).

- The Change in mean area (53.87%), change in residual (46.17%), interaction between changes in mean area and yield variance (31.41%) and change in area-yield covariance (21.68%) were predominant factors for the change in variance of Cholam production in Madurai district.
The variance in production of Cholam for the state as a whole was predominantly due to the change in mean area (44.97%) followed by change in area variance (35.46%), change in residual (25.03%) and interaction between changes in mean area and yield variance (5.01%). The change in yield variance, change in area-yield covariance, change in mean yield, and interaction between changes in mean yield and mean area were observed negative.

6.5.3 Components of Change in the Variance of Production of Cumbu

It is worth noting from the results that, the change in variance of Cumbu production was predominantly due to the change in residual factors in Chengalpattu (103.43%), South Arcot (77.02%), Dharmapuri (80.86%), Coimbatore (110.26%), Periyar (120.72%) and North Arcot (81.45%) districts.

In Tiruchirappalli district, the change in variance of Cumbu production was mainly due to the change in mean area (166.79%), followed by interaction between changes in mean area and yield and changes in area-yield covariance (145.59%), change in area variance (65.76%) and change in yield variance (8.91%) However, the change in area-yield covariance (-200.27%) was negative in Tiruchirappalli district.

The variance in production of Cumbu for the state as a whole was predominantly due to the interaction between changes in mean area and yield variance followed by change in mean area, change in residual, and interaction between changes in area-yield covariance. The change in mean yield, change in yield variance, and interaction between changes in mean area and yield and changes in area-yield covariance were observed negative.

6.5.4 Components of Change in the Variance of Production of Ragi

The results of the analysis showed that changes in residual accounted as high as 54.42 per cent of the total change in the variance of Ragi production in the state. The change in mean area contributed 43.08 per cent and interaction between changes in the mean area and the yield variance contributed 29.04 per cent.
In the case of South Arcot district, change in residual contributed the largest share followed by change in area-yield covariance. More or less similar pattern was discernible in changes in the variance of Ragi production in Dharmapuri district.

Among the remaining districts, a change in residual accounted for the most of the changes in the variance of production in Ragi.

### 6.5.5 Components of Change in the Variance of Production of Maize

- The perusal of the analysis reveals that interaction between changes in mean and yield accounted as high at 32.33 per cent of the total change in the variance of Maize production in Tamil Nadu. Interaction between changes in mean area and yield and changes in area-yield covariance contributed more than 20 per cent and the change in residual explaining 14.18 per cent of variability in Maize production.

- The pattern was different for different districts. For example, in the case of North Arcot district, change in residual accounted for the largest share followed by change in mean yield. In case of Salem district, change in yield variance accounted for the most of the changes in the variance of production of Maize followed by interaction between changes in mean yield and area variance.

- In the case of Dharmapuri district, interactions between changes in mean yield and area variance and change in area variance were important components explaining larger proportions in the variability of Maize production between the two periods.

### 6.6 CONCLUSION AND POLICY IMPLICATIONS

The compound growth rate for area under foodgrains cultivated in Tamil Nadu shows a clear picture that area under Paddy, Cholam, Cumbu and Ragi gets shrinking during the study period particularly after the introduction of new economic reforms. The study also found a decline in the growth rate of production and yield of the above mentioned four foodgrains. However, the growth rate of area, production and yield of Maize is increasing.

The study also concludes that there persist huge increase in the instability of area, production and yield of almost all the crops studied over the review period. Foodgrain
cultivation in the post-reform period remained more unstable as compared to the pre-reform period. The results of the decomposition analysis revealed that the change in mean production of Paddy was mainly due to the change in mean yield, while the change in mean production of Cholam, Cumbu, Ragi and Maize was mainly due to the change in mean area.

In the view of the above findings following suggestions are recommended for suitable policy formulations.

- Supply of land resource is limited in nature. To meet the future increased demand for foodgrains, the productivity should be boosted up by adoption of improved technologies like hybrid varieties cultivation.

- Long-term investments should be encouraged and boosted up to bring the uncultivated barren and waste lands under the plough.

- Programmes should be undertaken to evolve specific varieties to suit the soil and climatic conditions so as to derive better yields.

- Site specific techniques depending on the type of soil and pattern of rainfall have to be increasingly made familiar with the farmers.

- Packages for efficient water harvesting technology should be adopted for getting maximum benefit from the available water resources.

- The production and distribution of seed of improved varieties need to be paid special attention to bring stability in production.

- Expansion of area under irrigation, development of watershed and development of varieties resistant to insects, pests and climate stress are the other major factors for reducing variability in area, production and yield.

- There is also a need for large scale promotion of stabilization measures like crop insurance to face the consequences of production fluctuations.

- Farmers should be encouraged to use appropriate amounts of inputs like fertilizers, improved seeds, pesticides and water.

- The technological innovations so far generated by the institutions and agencies for improving the agriculture production should be transferred to the farmers by extension programmes.