CONCLUSION
1. From the analysis monthly rainfall it is found that in January, February, March the mean rainfall less than 10 mm. In April, May and December months the mean rainfall ranges from 10 mm to 50 mm. The mean rainfall varies 50 mm to 100 mm in June, July, August and November months. The mean rainfall it exceeds 100 mm in September, October months. The rainfall variability and ratio low in September and October months. The variability and ratio values are moderate in June, July, August, November and December months.

2. The variability and ratio values are high in April and May months and very high in

3. January and February months.

4. From the analysis of seasonal rainfall it is found that southwest monsoon and northeast monsoon are highly favorable for crop cultivation.

5. The mean annual rainfall of the Rayalaseema region varies from 485 mm in Yadiki station to a maximum of 1285 mm in Satyavedu station.

6. The rainfall variability ranges from 21% in G.Bramheswaram to a maximum of 38% in Yadiki station.

7. The rainfall ratio ranges from 87% in P.Ahobilam to a maximum of 210% in Yadiki station.

8. From the analysis of the decadal rainfall it is found that in majority of the stations there is increase in rainfall which varies
from 12 mm in the Kadiri station to a maximum of 220 mm in Urvakonda station. The decrease in decadal rainfall decreasing is found in Adoni, Kadapa and Hindupur stations. The decrease noticed varies from 5 mm to 38 mm. The average decadal rainfall analysis 1901-10 to 2001-10 shows neither increase nor decrease in the decadal average rainfall of 713.81 mm.

9. From the analysis it is found the during 1911-20, 1951-60, 1961-70 and 1991-2000 the decadal variability is high. In other decades the variability is low.

10. From the analysis of the mean monthly precipitation it is found that in the September and October months the rainfall received is above 100mm. The mean rainfall varies from 90mm to 100mm in July, August and November months. In May and June months the mean rainfall varies from 50mm to 70mm. In April and December months the mean rainfall ranges from 10mm to 30mm. The mean rainfall is less than 10mm in January, February and March months. From the analysis mean rainfall it is found that July, August, September, October and November are highly suitable for crop cultivation.

11. The analysis average potential evapotranspiration indicates that during March, April, May, June and July months the average potential evapotranspiration value is more than 150mm. It varies from 100mm to 150mm in February, August,
September and October months. It is less than 100mm in January, November and December months.

12. The analysis of average monthly of actual evapotranspiration values depict that the average actual evapotranspiration values are more than 100mm in September and October months. The average actual evapotranspiration values vary from 50mm to 100mm in January, May, June, July, August, November and December months. The average actual evapotranspiration values are less than 50mm in February, March and April months.

13. The analysis average of monthly water deficit values reveal that there are more than 100mm in the months of March, April and May months. The average water deficit varies from 50mm to 100mm in February, June and July months. The average of water deficit ranges from 10mm to 50mm in January and December months. The average water deficit value is less than 10mm in September, October and November months of the Rayalaseema region.

14. There is no water surplus in January, February, March, April, May, June months. However, in a few stations the average water surplus is less than 5mm in July, August and December months. It varies from 10mm to 30mm in September, October and November months.

15. The monthly analysis of the average moisture adequacy values reveal that the average moisture adequacy values are more than
90% in September, October and November months. The average moisture adequacy value ranges from 50% to 90% in January, July, August and December months. The average moisture adequacy values are less than 50% in February, March, April, May and June months. In these months the crop cultivation is not suitable due to low moisture adequacy, low water availability and high water deficit.

16. From the analysis average Aridity Index values it is found that the average value is more than 50% in February, March, April, May and June months. The average Aridity Index value ranges from 20% to 50% in January, July, August and December months. The average Aridity Index value is less than 10% in September, October and November months. From the study of average Aridity Index values it is found that the high water storage in the Rayalaseema region is found in February, March, April, May and June months. There is moderate water storage in January, July, August and December months. There is very low water storage in September, October and November months.

17. The analysis of average Moisture Index show semi arid type of climate in February, March, April, May and June months in the Rayalaseema region. In January, July, August, September, October, November and December months dry sub humid type of climate is found.
18. The seasonal analysis of water balance elements indicate that the mean precipitation is highest (403.70mm) in southwest monsoon period followed by northeast monsoon (246.48mm), summer period (73.66mm) and winter period (9.33mm). The potential evapotranspiration value is found highest (602.78mm) in southwest monsoon period, followed by summer period (530.29mm), northeast monsoon period (309.51mm) and winter period (212.08mm). The average actual evapotranspiration values are highest (394.32mm) in southwest monsoon period, followed by northeast monsoon period (281.47mm), summer period (134.51mm) and winter period (96.89mm). The analysis of seasonal water deficit values indicate that the average water deficit is highest (395.78mm) in summer period, followed by southwest monsoon period (208.46mm), winter period (115.19mm) and northeast monsoon period (28.04mm).

19. There is no water surplus in winter and summer periods. However, in a few stations the average water surplus is (38mm) in northeast monsoon period and (5mm) southwest monsoon period. The analysis of seasonal moisture adequacy values depict that the average moisture adequacy is highest (91%) in northeast monsoon period, followed by southwest monsoon period (65%), winter period (46%) and summer period (25%).

20. The analysis of average Aridity Index values indicate that during summer period the average Aridity Index value is 75% followed by 54% in winter period, 25% in southwest monsoon
and 9% in northeast monsoon period. From the analysis of seasonal average moisture adequacy and Aridity Index it is found that during northeast monsoon, southwest monsoon and winter periods are suitable for crop cultivation.

21. The analysis of average seasonal Moisture Index values depicts that during summer period the Rayalaseema region experiences semi-arid type of climate. During winter, southwest monsoon and northeast monsoon periods the average values of Moisture Index show dry sub humid type of climate in the Rayalaseema region.

22. The actual evapotranspiration value varies from 674mm in Dharmavaram station to a maximum of 1190mm in P.Ahobilam station. The average actual evapotranspiration value of the Rayalaseema region is 899.23mm.

23. The water deficit ranges from 370mm in Srisailam station to a maximum of 1058mm in Dharmavaram station. The average water deficit of the Rayalaseema region is 759.19mm.

24. The moisture adequacy value varies from 39% in Dharmavaram station to a maximum 74% in G.Bramheswaram and Srisailam stations.

25. The Aridity Index value varies from 26% in G.Bramheswaram and Srisailam stations to a maximum of 61% in Dharmavaram station.
26. The Moisture Index values show semi-arid type of climate in Anantapur and Dharmavaram stations. In other stations dry sub-humid type of climate is noticed.

27. The distribution forest is uneven in the Rayalaseema region. The total area of forest in the Rayalaseema region is 14,89,960 hectares of land in 2009-10 which accounts to 22.14% of the total geographical area of the Rayalaseema region. The Kadapa district has the highest forest cover of 5,00,295 hectares of land which accounts to 33.58% of the total forest area of the Rayalaseema region. The Chittoor district possesses about 4,52,018 hectares of land which accounts to 30.33% of the total forest area of the Rayalaseema region. The Anantapur district the total forest cover is 1,96,978 hectares of land which accounts to 13.22% of the forest area of the Rayalaseema region. In Kurnool district the total forest area is 3,40,669 hectares of land which accounts to 22.86% of the total forest area of the Rayalaseema region.

28. The total land under barren and uncultivable land is about 6,98,608 hectares of land in 2009-10 which accounts to 10.381% of the total geographical area. Out of this 2,22,538 hectares is found in Kadapa which accounts to 31.854% of the total barren and uncultivable land. In Anantapur district the total land under barren and uncultivable land is 1,85,105 hectares which accounts to 26.496% of the total barren and uncultivable land of the Rayalaseema region. In Chittoor district about 1,63,650
hectors of land is found under barren and uncultivable land which accounts to 23.425% of total barren and uncultivable land of the Rayalaseema region. The Kurnool district posses 1,27,315 hector of barren and uncultivable land which accounts to 18.224% of the total barren and uncultivable land of the Rayalaseema region.

29. The total area under land put to non agriculture land use is 5,88,912 hectares of land in 2009-10 which accounts to 8.751% of the total geographical area of the Rayalaseema region.

30. The land put to non agriculture land use is high in Kadapa district which amounts to 1,81,015 hectares and accounts to 30.737% of the total land put to non agriculture use of the Rayalaseema region. In Chittoor district about 1,48,529 hectares of land is under this category of land use and accounts to 25.220% of the land total land put to non agriculture land of the Rayalaseema region. About 1,38,577 hectares land is found Kurnool district and accounts to 23.531%. In Anantapur district it is about 1,20,791 hector of land which accounts to 20.510%.

31. The total land under permanent pastures and other grazing lands are about 55,971 hectares in 2009-10 which accounts to 0.831% of the total geographical area of the Rayalaseema region. In Chittoor district the total area under permanent pastures and other grazing land is about 33,769 hectares of land which accounts to 60.33% of the total land under permanent pastures and other grazing land of the Rayalaseema region. In
Kadapa district it is about 9,674 hectares which accounts to 17.283% of the total land. The Anantapur district posses 8,952 hectares land to which accounts to 15.993%. In Kurnool district an area of about 3,576 hectares of land is found under permanent pastures and other grazing land which amounts to 6.389% of the total land under permanent pastures and other grazing lands.

32. The total miscellaneous tree crops is about 53,470 hectares of land in 2009-10 which accounts to 0.794% of the total geographical area of the Rayalaseema region. The Chittoor district posses 35,496 hectares of land which accounts to 66.384%. The Anantapur district has 9,416 hectares of land under miscellaneous tree crops and which accounts to 17.609%. The Kadapa district posses 6,817 hectares of land and amounts to 12.749% and the Kurnool district has 1,741 hectares land under miscellaneous tree crops which accounts to 3.256%.

33. The land under the category of cultivable waste land is about 1,91,563 hectares in 2009-10 which accounts to 2.846% of the total geographical area of the Rayalaseema region. The cultivable of waste land is about 52,829 hectares of land in Anantapur district which accounts to 27.577%. In Kadapa district the total area under cultivable waste land is about 48,481 hectares which accounts to 25.308% of the total cultivable waste land of the Rayalaseema region. In Kurnool district the total cultivable waste land is about 48,292 hectares which accounts 25.209%. In
Chittoor district about 41,916 hectares of cultivable waste land amounts to 21.904% of the total land under uncultivable waste land.

34. The total land under other fallow is about 3,48,330 hectares of landing 2009-10 which accounts to 5.176% of the total geographical area of the Rayalaseema region. The total area under other fallow land in Chittoor district is about 1,14,920 hectares of land which accounts to 32.99% of the total land under other fallow land of the Rayalaseema region. In Anantapur district an area of about 88,502 hectares of land is found under other fallow lands and accounts to 25.407%. In Kurnool district it is about 75,980 hectares which amounts to 21.812%. In Kadapa district it is found in about 68,928 hectares which amounts to 19.788% of the total land under other fallow category of the Rayalaseema region.

35. The total land under current fallows is about 5,35,459 hectares of land in 2009-10 which amounts to 7.957% of the total geographical area of the Rayalaseema region. The current fallow land is high in Anantapur district followed by Kurnool, Chittoor and Kadapa districts. In Anantapur district it is about 1,67,560 hectares of land which accounts to 31.292%. In Kurnool district the total area under current fallsows 1,40,528 hectares which amounts to 26.244% of the total current fallows of the Rayalaseema region. In Chittoor district the land under current fallsows is about 1,34,536 hectares which amounts to 25.125%. In
Kadapa district the total land under current fallows 92,835 hectares which amounts to 17.337% of the total current follows of the Rayalaseema region.

36. The total land under net area sown is about 2,767,752 hectares in 2009-10 which accounts to 41.129% of the total geographical area of the Rayalaseema region. The net area sown in Anantapur district is about 10, 82,867 hectares of land which accounts to 39.124% the total net area sown of the Rayalaseema region. In Kurnool district the total area under net area sown is about 8, 89,122 hectares of land which amounts to 32.124%. In Kadapa district it is about 4, 05,276 hectares of land which accounts to 14.642%. In Chittoor district the total net area sown is about 3, 90,487 hectares of land which amounts to 14.108%.

37. From the analysis of the land use efficiency it is found that in about 55 mandals the land is efficiency is high in the Rayalaseema region. Among them the Chittoor district has 23 mandals, Kadapa district has 16 mandals, Anantapur district has 10 mandals and Kurnool district has 6 mandals. The land use efficiency is moderate in 69 mandals of the Rayalaseema region. Among them 26 mandals are found in Chittoor district, 19 mandals are found in Kadapa district, 15 mandals are found in Anantapur district and 9 mandals are found in Kurnool district. The land use efficiency is found low in 109 mandals of the Rayalaseema region. Among them 38 each mandals are found in Kurnool and Anantapur district, 17 mandals in
Chittoor district and 16 mandals in Kadapa district. In about 46.78% of the mandals the land use efficiency is less than 35% and it is low. In about 29.61% of the mandals the land use efficiency varies from 35% to 45% and it is moderate. In about 23.60% of the mandals the land use efficiency is high and exceeds 45%.

38. The total irrigated area of Rayalaseema region is 6,30,918 hectares of land which accounts to 9.375% of the total Geographical area of the Rayalaseema region. Out of this about 1,39,878 hectares of land (22.17%) is under canal irrigation, 45,490 hectares of land (7.210%) is under tank irrigation, 3,65,128 hectares of land (57.87%) is under tube well irrigation, 68,021 hectares of land (10.781%) is under dug well irrigation, 9,828 hectares of land (1.557%) under lift irrigation and 2,573 hectares of land (0.407%) is under other sources of irrigation. The main sources of irrigation in Rayalaseema region is in tube well followed by canal, dug well, tanks, lift irrigation and other sources of irrigation.

39. The total canal irrigated area in Rayalaseema region is 1,39,878 hectares of land in 2009-10 which accounts for 2.078% of the total geographical area and 22.17% of the total irrigated area. The Kurnool district has the maximum irrigation of 91,587 hectares of land which accounts for 67.47% of the total canal irrigated area of the Rayalaseema region, followed by 27,042 hectares of land in Kadapa district which amounts to 19.33%, 20,965
hectors of land in Anantapur district which accounts to 14.99% and 284 hectares of land in Chittoor district which amounts to 0.203% of the total canal irrigated area.

40. The total tank irrigated area of the Rayalaseema region in 45,490 hectares of land 2009-10 which accounts to 0.675% of the total geographical area and 7.21% of the total irrigated area of the Rayalaseema region. The tank irrigation is found in high in Chittoor district. The total tank irrigated in Chittoor district is 21,998 hectares which accounts to 48.375%. In Kurnool district the total tank irrigated area is 8,878 hectares of land which amounts to 19.516%. In Anantapur district the total tank irrigated area is 7,391 hectares which accounts to 16.247% and in Kadapa district the total tank irrigated area is 7,223 hectares which amounts to 15.878% of the total tank irrigated area of the Rayalaseema region.

41. The total tube well irrigated area of the Rayalaseema region is 3,65,128 hectares of land in 2009-10 which accounts to 4.425% of the total geographical area of Rayalaseema region and 57.87% of the total irrigated area of the Rayalaseema region. The tube well irrigation is high in Kadapa district it is about 1,17,997 hectares of land and amounts to 32.316% of the total tube well irrigated area of the Rayalaseema region. It is followed by Chittoor district which posses 97,995 hectares of tube well irrigation which accounts to 26.838%. In Anantapur district the total tube well irrigation is about 80,093 hectares of land which
accounts to 21.935% of the total tube well irrigated area. In Kurnool district about 69,043 hectares of land is under tube well irrigation and accounts to 18.909%.

42. The total area under dug well irrigation is about 68,021 hectares of land in 2009-10 which accounts to 1.01% of the total geographical area and 10.781% of the total dug well irrigated area of the Rayalaseema region. The dug well irrigation is found in high in Kurnool district. The area is about 28,201 hectares of land which accounts to 41.46% of the total dug well irrigated area. It is followed by Chittoor district which has 26,871 hectares of dug well irrigation and it amount to 39.50% of the total dug well irrigation. In Anantapur district the total dug well irrigated area is about 8070 hectares and it accounts to 11.86%. In Kadapa district the dug well irrigated area is low and it accounts to 4,879 hectares of land which is 7.17% of the total dug well irrigated area.

43. The total area under lift irrigation is 9,828 hectares of land in 2009-10 which accounts to 0.416% of the total geographical area and 1.557% of the total irrigated area of the Rayalaseema region. In Kurnool district the maximum lift irrigation area 9,206 hectares of land is found which accounts to 93.67% of the total lift irrigated area followed by Kadapa district which has 554 hectares of land and accounts to 5.64%. In Anantapur district it is about 68 hectares of land is under lift irrigation and it accounts to 0.69% of the total lift irrigation area.
44. The total land under other sources of irrigation is 2,573 hectares which accounts to 0.038% of the total geographical area and 0.407% of the total irrigated area of the Rayalaseema region. The Anantapur district has highest area of about 1,590 hectares of land under other sources irrigation which accounts to 61.79% of the total other sources irrigated area, followed by Kurnool district with 873 hectares and accounts to 33.929%. In Kadapa district with it is about 88 hectares which accounts to 3.420% and in Chittoor district it is about 22 hectares of land which amounts to 0.855% of the total other sources irrigated area of the Rayalaseema region.

45. From the analysis of intensity of irrigation in the Rayalaseema region it is found that the irrigation intensity is high in 39 mandals which accounts to 16.67%, moderate in 43 mandals which amounts to 18.38% and low in 152 mandals which accounts 64.95%. In other words the intensity of irrigation is low in the Rayalaseema region particularly in Anantapur and Kurnool districts.

46. The total groundnut cropped area of the Rayalaseema region is 14, 46,514 hectares of land in 2009-10 which accounts to 48.64% of the total cropped area in Rayalaseema region. The groundnut crop is found high in Anantapur district it is cultivated in 8, 70,456 hectares of land which accounts to 60.18% of the total groundnut cropped area. In Kurnool district the groundnut crop is cultivated in 2, 46,143 hectares of land.
which accounts to 17.03% of the total groundnut cropped area. In Chittoor district the groundnut crop is cultivated in 1,88,903 hectares of land which accounts to 13.06%. In Kadapa district the groundnut crop is cultivated is 1,41,012 hectares of land which amounts to 9.75% of the total groundnut cropped area of the Rayalaseema region.

47. The total cropped area of sunflower in Rayalaseema region is 3,72,427 hectares of land in 2009-10 which accounts to 12.52% of the total cropped area of the Rayalaseema region. In Kurnool district the sunflower crop is cultivated in about 2,33,509 hectares of land which accounts to 63.24% of the total sunflower cropped area. In Kadapa district it is cultivated in 93,466 hectares which amounts to 25.31% and in Anantapur district the sunflower crop is cultivated in 42,272 hectares which accounts to 11.45%. There is sunflower cultivation in Chittoor district is found in about 55 mandals. The total sunflower cropped area is 3,180 hectares which accounts to 0.85% of the sunflower cropped area of the Rayalaseema region.

48. The total bengal gram cropped area is about 3,68,592 hectares of land in 2009-10 which accounts to 12.40% of total cropped area of the Rayalaseema region. The bengal gram is cultivated in about 2,24,086 hectares of land in Kurnool district which accounts to 60.79% of the total cropped area. In Anantapur district it is cultivated in 73,055 hectares of land which amounts
to 19.82% of the total bengal gram cropped area. In Kadapa district it is cultivated in 71,451 hectares of land which amounts to 19.38%. There is no bengal gram crop cultivation in Chittoor district. The bengal gram crop concentration is high in Kurnool district.

49. The total paddy cropped area of the Rayalaseema region is about 2,80,760 hectares of land in 2009-10 which amounts to 9.44% of total cropped area of the Rayalaseema region. The Kurnool district has maximum paddy cropped area of 1,11,449 hectares of land which amounts to 39.69% of the total paddy cropped area followed by 65,066 hectares of paddy cropped land in Kadapa district which amounts to 23.17% of the total paddy cropped area of the Rayalaseema region. In Chittoor district the total paddy cropped area is 55,523 hectares of land which accounts to 19.77% of the total paddy cropped area of the Rayalaseema region. In Anantapur district the total paddy cropped area is 48,722 hectares of land which amounts to 17.35% of the total paddy cropped area of the Rayalaseema region.

50. In about 21,1525 hectares of land in 2009-10 in Rayalaseema region is used for cultivation of fruits and vegetables which accounts to 7.11% of the total cropped area of Rayalaseema region. In Chittoor district the fruits and vegetables crop cultivated area is about 82,798 hectares which accounts to 39.14% of the total cropped area of fruits and vegetables of the
In Kadapa district the area under fruits and vegetables is about 57,892 hectares which accounts to 27.37% of the total cropped area of fruits and vegetables. In Anantapur district the fruits and vegetables are cultivated in about 38,384 hectares which amounts to 18.15% of the total cropped area of fruits and vegetables. In Kurnool district the area under fruits and vegetables is about 32,451 hectares which amounts to 15.34% of the total cropped area of fruits and vegetables of the Rayalaseema region. The concentration of fruits and vegetables crop is high in Chittoor and Kadapa districts followed by Anantapur and Kurnool districts.

51. The jowar cropped area of Rayalaseema region is about 87,900 hectares of land in 2009-10 which accounts to 2.95% of the total cropped area of the Rayalaseema region. The Kurnool district has the maximum cropped area of 66,260 hectares of jowar cropped land which accounts to 75.38% of the total jowar cropped area followed by Anantapur district which has about 14,388 hectares of land which amounts to 16.38% and Kadapa district with 7,252 hectares of land which accounts to 8.25% of the total jowar cropped area of the Rayalaseema region. There is no jowar crop in Chittoor district.

52. The total cropped area sugar cane is 48,060 hectares which accounts to 1.62% of the total cropped area of Rayalaseema region. The concentration of sugar cane in Kadapa district is low in Khajipeta, Kamalapuram, Chennur, Chinnamandem,
Sambepalli, T.Sundupalli, Nandalur, Rajampet and Kodur mandals in Chitvel mandals is moderate. In Kurnool district the concentration of sugar cane is low in Orvakal, Veldurthi, Velugode, Panyam, Gadi vemula, Sirvel, Chagalamarri, Gospadu, Koilakuntla, Sanjamala, Adoni and Devanakonda mandals. It is moderate in Mahanandi and Rudravaram mandals. It is high in Nandyal mandal of Kurnool district the concentration of sugar cane in Anantapur district is low in B.K.Samudram, Narpla, Yadiki, Puttaparthi, Kothacheruvu, Bukkapatnam, Madakasira, Lepakshi, Gorantla and Nallamada mandals. There is no moderate and high concentration of sugar cane in Anantapur district.

The total red gram crop cultivation is found in 40,184 hectares of land in 2009-10 which accounts to 1.35% of the total cropped area of the Rayalaseema region. The red gram is cultivated in about 30,303 hectares in Kurnool district which accounts to 75.41% of the total red gram cropped area of the Rayalaseema region. In Kadapa district it is cultivated in 10,488 hectares of land which amounts to 26.10% of the total red gram cropped area of the Rayalaseema region. In Anantapur district it is cultivated in only 23 hectares which amounts to 0.006% of the total red gram total cropped area of the Rayalaseema region. The red gram is cultivated as inter-cropping with ground crop. Its concentration is high in Kurnool district followed by Kadapa district.
54. The total cotton cropped area of the Rayalaseema region is 35,594 hectares in 2009-2010 which accounts to 1.20% of the total cropped area of the Rayalaseema region. In Kurnool district the cotton crop is cultivated in about 23,397 hectares which amounts to 65.73% of the total cotton cropped area of the Rayalaseema region. In Kadapa district the cotton crop is cultivated in about 11,467 hectares which accounts to 32.22% of the total cotton cropped area of the Rayalaseema region. In Anantapur district the total cotton cropped area is about 730 hectares which accounts to 2.05% of the total cotton cropped area of the Rayalaseema region. There is no cotton crop in Chittoor district. The concentration of cotton crop area is high in Kurnool district followed by Kadapa district.

55. The total cropped area under chillies crop is about 16,965 hectares of land in 2009-10 which accounts to 0.57% of the total cropped area of Rayalaseema region. In Kurnool district the chillies crop is cultivated in about 14,085 hectares which accounts to 83.02% of the total chillies cropped area. In Anantapur district the chillies crop is cultivated in about 1,574 hectares which amounts to 9.28% of the total chillies cropped area of the Rayalaseema region. In Kadapa district the chillies crop is cultivated in about 1,306 hectares which accounts to 7.70% of the total chillies cropped area of the Rayalaseema region. The concentration of chillies crop is high in Kurnool district.
56. The onion crop is cultivated in about 16,098 hectares in 2009-10 which accounts to 0.54% of the total cropped area of the Rayalaseema region. In Kurnool district the onion crop is cultivated in about 14,580 hectares of land which accounts to 90.57% of the total onion crop cropped area of the Rayalaseema region. In Anantapur district the onion crop is cultivated in about 1,518 hectares which amounts to 9.43% of the total onion cropped area of the Rayalaseema region. The concentration of onion crop is high in Kurnool district.

57. The total cropped area of maize crop is 15,143 hectares of land in 2009-10 which accounts to 0.509% of the total cropped area of Rayalaseema region.

58. The mulberry crop is cultivated in about 7,005 hectares during 2009-2010 in Rayalaseema region. In Chittoor district it is cultivated in about 4,445 hectares of land which accounts 63.45% of the total mulberry cropped area of the Rayalaseema region. In Anantapur district the mulberry crop is cultivated in about 2,560 hectares of land which accounts to 36.55% of the total mulberry cropped area of the Rayalaseema region. There is no mulberry crop cultivation in Kurnool and Anantapur districts.

59. From the analysis of cropping pattern of the Rayalaseema region it is found that the total cropped area of groundnut is high which amounts to 14,46,514 hectares and amounts to 48.64% of the total cropped area of Rayalaseema region.
followed by sugar cane (12.95%), bengal gram (12.40%), paddy (9.44%), fruits and vegetables (7.11%), jowar (2.95%), sugar cane (1.62%), red gram (1.35%), cotton (1.20%), chillies (0.57%), onion (0.54%), maize (0.509%) and mulberry (0.24%) of the total cropped area of the Rayalaseema region.

60. The crop diversification is low in 43 mandals of Kadapa district, 24 mandals of Kurnool district, 47 mandals of Anantapur district and 40 mandals of Chittoor district in the Rayalaseema region. The crop diversification is high in 28 mandals which accounts to 12.01% of the total mandals. The crop diversification is moderate in 51 mandals which accounts to 21.88% of the total mandals in the Rayalaseema region. The crop diversification is low in 154 mandals which accounts to 66.09%. The diversification is low in majority of the mandals because of dry conditions prevailed in majority of the mandals of the Rayalaseema region. However, in irrigated crops the crop diversification index is high.

61. In the Rayalaseema region there are about 101 mandals with mono crop which accounts to 43.53% of the mandals. 35 mandals with two crop combination which accounts to 15.09%. 40 mandals with three crop combination which accounts to 17.24%. 39 mandals with four crop combination which accounts to 16.81%. 16 mandals with five crop combination which accounts to 6.90% and one mandal with six crop combination which accounts to 0.43%. In the entire Anantapur district mono
crop (groundnut) is cultivated. In Kadapa, Kurnool and Chittoor district there are more number of crop combinations and crop diversification.

62. From the analysis the intensity of cropping pattern of the Rayalaseema region it is found that in about 152 mandals the intensity cropping pattern is low which accounts to 64.95% of the mandals. It is moderate 43 mandals which amounts to 18.33% and high in 39 mandals which amounts to 16.67% of the mandals. In other words the intensity cropping pattern is low because of low rainfall, high potential evapotranspiration, low actual evapotranspiration, high water deficit and low irrigated area.

63. During the humid period the number of water availability days from 0 days in Badvel station to a maximum of 184 days in Srisailam station.

64. During wet period the number of days varies from 61 in Penukonda station to a maximum 215 days in Badvel station.

65. In moderately dry period the number of days varies from 31 in Puttaparthi and Rajampet station to a maximum of 212 days in Madakasira and Urvakonda stations.

66. During dry period the number of days range from 0 days in G.Bramheswaram, Kuppam, Madakasira, Madanapalli, P.Ahobilam, Palamaneru, Punganuru, Satyavedu and Srisailam stations to a maximum of days in Dharmavaram and Jammulamadugu stations.
67. From the analysis water availability days it is found that the number of days in moderately dry and dry period exceeded 170 days in Allagadda, Anantapur, Bukkapatnam, Dharmavaram, Dhone, Yemmiganur, Gooty, Hindupur, Jammulamadugu, Kadiri, Kalyanadurgam, Koilakuntla, Kurnool, Madakasira, Penukonda, Proddutur, Pulivendula, Rayachoti, Rayadurgam, Tadipatri and Urvakonda stations. In all these stations crop cultivation can be carried out by providing water resources through canal, tube well, dug well and tank irrigation.

68. In humid period the number of months varies from 0 in Badvel station to a maximum of 6 months in Srisailam station.

69. In wet period the numbers of months vary from two in Dharmavaram station to a maximum of seven months in Badvel station.

70. From the analysis humid and wet period it is found that in Puttur station there are 10 months. They are January, February, March, June, July, August, September, October, November and December months. In P.Ahobilam, Palamaneru, Punganuru, Srisailam and G.Bramheswaram stations there are 9 months. The months are January, February, June, July, August, September, October, November and December months. In Bangarupalem, Rajampet, Satyavedu, Sidhavatam, Kuppam and Madanapalli stations there are 8 months in humid and wet periods. They are January, February, July, August, September, October, November and December months. In Adoni,
Atmakur, Badvel, Chandragiri, Chittoor, Kadapa, Srikalahasti, Kamalapuram, Nandikotkur, Nandyal, Pathikonda, Vayalpadu and Yadiki stations there are 7 months in humid and wet period they months are January, July, August, September, October, November and December months and June, July, August, September, October, November and December months. In Allagadda, Alur, Bukkapatnam, Dhone, Yemmiganur, Gooty, Hindupur, Jammulamadugu, Koilakuntla, Kurnool, Proddutur, Pulivendula, Rayachoti and Rayadurgam there are 6 months in humid and wet periods. The months are July, August, September, October, November and December. In Kadiri, and Madakasira stations there are 5 months in humid and wet periods. The months are August, September, October, November and December and January, August, September, October and November months. In Anantapur, Kalyanadurgam, Penukonda, Tadipatri and Urvakonda stations there are 4 months in humid and wet periods. They are September, October, November and December months. In Dharmavaram station there are only 3 months in humid and wet periods. There are September, October and November months.

71. From the analysis it is found in Puttur, G.Bramheswaram, P.Ahobilam, Palamaneru, Punganuru, Srisailam, Kuppam, Madanapalli, Rajampet, Satyavedu, Sidhavatam, Adoni, Banaganapalle, Chandragiri, Chittoor, Kadapa, Srikalahasthi,
Nandikotkur, Nandyal, Pathikonda, Vayalpadu and Yadiki stations the humid and wet periods range from 7 to 10 months. The period is highly suitable for crop cultivation.

72. In moderately dry period the number of months varies from one in Puttur and Rajampet stations to a maximum of 7 months in Madakasira and Urvakonda stations.

73. The dry period is nil in Bangarupalem, G.Bramheswaram, Kuppam, Madakasira, Madanapalli, P.Ahobilam, Palamaneru, Punganuru, Satyavedu and Srisailam stations.

74. From the analysis it is found that in Allagadda, Alur, Anantapur, Bukkapatnam, Dhone, Dharmavaram, Yemmiganur, Gooty, Hindupur, Jammulamadugu, Koilakuntla, Kadiri, Kalyanadurgam, Madakasira, Penukonda, Proddutur, Pulivendula, Rayachoti, Rayadurgam, Tadipatri and Urvakonda stations the moderately dry and dry periods extend from 6 to 9 months. In these stations the crop cultivation could be carried out only when the crop is supplemented with irrigation water.

75. The major crops cultivated in the Rayalaseema region according to the hierarchy are groundnut, sunflower, bengal gram, paddy, fruits and vegetables, jowar, sugarcane, red gram, cotton, chilies, onion, maize and mulberry. The ground nut is cultivated in about 14,46,514 hectares of land which accounts to 48.64% of the total cropped area. The sunflower is cultivated in about 3,69,247 hectares which accounts to 12.42% of the total
cropped area. The Bengal gram is cultivated in about 3,68,592 hectares which amounts to 12.47%. The paddy is cultivated 2,80,760 hectares of land which accounts 9.44%. The fruits and vegetables are cultivated in about 2,11,525 hectares of land which accounts to 7.11%. The jowar is cultivated in about 87,900 hectares which amount to 2.95% of the total cropped area. The sugarcane is cultivated in about 48,060 hectares which accounts to 1.62%. The red gram is cultivated 40,184 hectares which amounts 1.35%. The cotton is cultivated in black soil plains in about 35,594 hectares which accounts to 1.20% of the total cropped area. The chilies are cultivated in about 16,965 hectares of land which amounts to 0.57% of the total cropped area. The onion is cultivated in about 16,098 hectares which accounts to 0.54% of the total cropped area. The maize is cultivated in about 15,143 hectares and amounts 0.509% of the total cropped area. The mulberry is cultivated in about 7005 hectares which accounts to 0.24% of total cropped area of the Rayalaseema region.

76. The crops in the Rayalaseema region are cultivated both in Kharif and Rabi seasons. The Kharif season extends from July to December. The Rabi season extends from December to April months. Climatologically the humid and wet periods are for about 6 to 8 months in 39 stations of the Rayalaseema region. It extends from July to December. Therefore under normal climatic conditions the cultivation of crops during Kharif
season is highly favorable in 39 stations of the Rayalaseema region. However, depending upon water requirement for each crop the water has to supplemented through canal, tank and well irrigation. For example for cultivation of paddy the amount of required varies from 100cm to 120cm and it is a water logged crop. The duration of paddy crop varies from 100 to 120 days.

77. In areas where assured water supply is available through canal, tanks and well irrigation paddy could be cultivated. The sugarcane can also require about 200 to 225mm of the duration of crops water and for about 365 days. Therefore this crop can be cultivated only in areas where there is prolonged humid and wet periods for about 6 to 8 months. The sugarcane could be cultivated by supplementing water with canal, tank and tube well irrigation. It is noticed the concentration of sugarcane crop is high in Chittoor district, where the rainfall is high with high moisture adequacy. The groundnut is the major crop in the Rayalaseema region which accounts for 48.64% of the total cropped area it is mainly cultivated under rainfed conditions in Anantapur district. The groundnut of water requires is about 60 to 65 cm and the duration of crop is 105 days. Due to frequent failures of monsoon and occurrence of frequent drought in Anantapur district, the yield is very poor and varies from 400 to 600kgs per hectar. However, ground nut cultivated under canal, tank or well irrigation the yields are high and vary from
1200 to 1800kgs per hectar. In Anantapur district in almost all the stations the moderately dry and dry period extends from 7 to 9 months which extends from February, March, April, May, June, July and December months. Therefore the yield of ground nut crop is very low.

78. The cotton is cultivated in black soil plains of the Rayalaseema region in Jammulamadugu, Proddutur, Koilakuntla, Allagadda, Chagalamarri, Nandyal, Nandikotkur, Urvakonda, Vajrakarur, Bommanahal, Vidapanakal, Guntakal, Owk and Alur. In these mandals the moderately dry and dry period extends 6 to 8 months. The duration of crop is 165 days and the amount of water requires varies from 70 to 75 cm. Therefore, the cotton crop has to be supplemented with irrigation water. The chilies are also cultivated in black and red soils. The duration of crop is 160 days and the amount of water required varies from 75 to 80cm. The crop has supplemented with water. The sunflower is cultivated mainly in black soil plains during Kharif season. The agro-climatic conditions of favorable for cultivation of sunflower in black soil because the humid and wet period extends for 6 months in majority of the stations in the Rayalaseema region from July to December months. The bengal gram is also cultivated in black soils in humid and wet periods. The dry food crops cultivated are ragi, jowar and maize. The duration of crop varies from 100 to 105 days and amount of water required ranges from 45 to 50cm. They are cultivated in
the kharif season during humid and wet periods in the Rayalaseema region.

79. Due to plantation of hybrid variety of ragi, jowar and maize crops the crop yields have relatively increased. The onion is cultivated in red sandy soils of Kurnool district around Pathikonda, Yemmiganur, Kodumur, Gudur, C.Belagal, Nandyal, Mahanandi stations. The duration of crop is 70 days and the amount of water required varies from 30 to 35cm. The onion crop is cultivated in Kharif season. It has to be supplemented with irrigation water for better yields. The mulberry is cultivated in Chittoor, Anantapur districts. It is cultivated in Kharif and Rabi seasons. It has to be supplemented with irrigation water for better yields. Agro climatologically the Rayalaseema region can be divided into dry climate zone with semi arid conditions in Anantapur district, western Kurnool district and central Kadapa basin. The Nallamalai, Palakonda, Sheshachalam and Thirumala hills are grouped under wet sub-humid type of climate because these hilly regions receive annually more than 1000mm. The eastern plains of Chittoor district which receive more than 1000mm of rainfall annually are also grouped under wet sub-humid type of climate. In other parts of the Rayalaseema region dry sub-humid type of climate prevails and the crops should be supplemented with irrigated water for better yields.
80. The banana crop is cultivated in Nandyal, Mahanandi and Orvakal mandals of the Kurnool district and in a few parts in Anantapur, Kadapa and Chittoor district. The duration of crop is 365 days and the amount of water requirement ranges from 200 to 225cm. the crop can be cultivated only in irrigated fruits of the Rayalaseema region.

81. The fruits and vegetables concentration of high in Chittoor district followed by Kadapa, Anantapur and Kurnool districts. The crop requires water resources for healthy growth which can be supplemented through drip irrigation to save and conserve water resources. The duration of crops vary from 95 to 140 days and the amount of water requirement ranges from 55 to 60cm. Finally adaptation of modern irrigation methods like drip and sprinkler using high yielding variety of crops, supplying with required quantity organic and of inorganic measures and pesticides applied timely when it is warranted increase the crop yields of various crops cultivated in the Rayalaseema region.

82. The Nallamalai, Sheshachalam, Palakonda, Thirumala and Velikonda hills should be allowed to grow natural forests. Afforestation of bamboo, sandal wood, blue gum wood, cashew nut, wattle bark, eucalyptus, kusuma and teak plantation would increase the forest wealth in the above said hills.