A study on selected commercial crops yield in anantapur and chittoor districts of rayalaseema region

[1]T. Govardhana
Research Scholar
Department of Economics,
Yogi Vemana University, Kadapa, India.

Abstract: The paper examines the yield of commercial crops namely sugar cane and groundnut. in Anantapur and Chittoor Districts of Rayalaseema region the study revealed that growing commercial crops in the Rayalaseema regionwhere, groundnut is a major crop is good pattern. Crop diversification gives good yields along with crop rotation in these districts. There is a need to provide water facility for huge productivity of sugarcane and groundnut and other commercial crops. The farmers should be a warped and provided new methods of agriculture for commercial crops to full the targets of productivity.

*Key words***:** Commercial crops,Commercial Diversification,Rayalaseema.

INTRODUCTION

Agriculture as a primary industry plays a significant role in the process of the economic development of a country. In the early stage's agriculture is the major contributor to national income and it provides employment to a majority of people. At later stages of a fairly high level of economic progress, the importance of agriculture gradually declines. About 65 to 70 percent of our people depend on agriculture for their live hood. In the name of New Economic Reforms (1991) a structural change took place at the national as well as state level. However, during the post-economic reform period the issues were to raise the productivity, increase the cultivable area of pulses and commercial crops, effective utilization of irrigation facility and development of rural market for the improvement of the agriculture to achieve agriculture a growth of not less than 4 per cent. Now it is around 2 per cent and is declining. The output index of all crops increased at 3.4 per cent per year in the 1980s as well as in the early 1990s. The growth rate of GDP from agriculture declined from 4.2 per cent in the 1980s to 3.7 percent per annum in the 1991s. The growth

REVIEW OF LITERATURE

I.V.Y. Rama Rao (2012) in his study shown that the value of BCR is higher for plant crop in irrigated (1.49%) than in rain fed (1.43%) regions. The yield gap between irrigated and rain fed regions has been found to be 67.00%, in which input usage had a higher (41.86%) effect than cultural practices (25.93%). Murali P., Balakrishnan R. (2011) found that The study has found the mechanical operations to be superior to manual operations in sugarcane cultivation. These have reduced cost of production and have enabled efficient utilization of resources with better work output. A. Jothirajan (2005) studied an analysis of the cost and returns structure, per acre net income distribution among different group of farmers. It indented the important determinants of yield, yield gap and yield constraints and also analyses the marketable surplus, market structure and marketing channels. Patel Arun S. (2006) was observed in this book "Review of State Agriculture Policy in Gujarat" that during 1949-96 the productivity annual growth rate was higher than 2.50 per cent in respect of all food grains including chilies, potatoes, castor, mustard and tobacco but the growth rate of groundnut was very poor which covering around 17 per cent of gross cropped area in the TE 2000-01. The yield improvement is not observed to any significant extent mainly due to rain effect. Besides, the HYVs have shown a moderate impact also.

OBJECTIVES

The present study has been designed to look into the following objectives.

1.   To determine the growth and instability of selected commercialcrops Sugarcane andGroundnut in Anantapur and Chittoor districts of Rayalaseema Region.

2.   To examine the hectarage response of farmers of selected cropsin two selected districts.

3.   To suggest the measures to improve the productivity ofSugarcane and Groundnut crops in selected district.

METHODOLOGY

To full the first objective, to analyse the trends, growth and instability in cropping area, production and yield of the selected commercial crops sugarcaneand groundnut in Anantapur and Chittoor districts. Both the linear and compound growth models were estimated. Due to outcomes of both the linear and compound growth models are same; the analysis was carried out only for linear model. But graphical representation was given along with compound growth model. The modest linear model was used. The model was

$$Y = A + B_t - - - - - - - - (1)$$

To determine the LGR, the form of function is

$$LGR = \frac{\hat{B}}{\bar{Y}} \times 100 - - - - - - - (2)$$

To describe the compound growth rate CGR, the exponential function of form is

$$Y = A * B - - - - - - - (3)$$

Where,

Y = area/production/yield,

t =time and

A, B are the constant factors to be resolute.

The percentage of CGR is calculated by the following formula

$$CGR = (B - 1) \times 100 - - - - - - - - - - - (4)$$

The coefficient of time (B) was tested by $t -$test statistic

$$t = \frac{\hat{B}}{SE \ of \ \hat{B}}$$

$$SE \ of \ \hat{B} = \sqrt{\frac{\sum(Y - \bar{Y})^2}{N}}$$

DATA

The study of objectives is based on secondary data. The relevant data was collected from various issues of "Seasons and Crop Report of A.P." and "Statistical Abstract of AndhraPradesh" issued by the Directorate of Economics and Statistics, Government of Andhra Pradesh, www.apdes.ap.gov.in.

LIMITATIONS

The study is confined to the districts of Anantapur and Chittoor of Rayalaseema region, Andhra Pradesh only. The study is limited to the trends, growth production and yield of the selected commercial crops sugarcane and groundnut.

Brief of rayalaseema - performance of crops

Rayalaseema is a geographic region in the Indian state of AndhraPradesh. It comprises four districts of the state namely, Anantapur, Chittoor, Anantapur and Chittoor. As of 2011 census of India, the region with four districts had a population of 15,184,908 and covers an area of 67,526 km2 (26,072 sq mi). Of the total geographical (6.72 million ha) area of the Rayalaseema region, only 39.8% (2.67 million ha) is the net area sown (including fish and prawn culture) under different crops. Only 4% of the total geographical area (0.26 million ha) is sown more than once. In this region in the state growing food crops like paddy, jowar commercial crops like sugarcane, cotton, and oil seed crops like Groundnut, and Sunflower. The demand for these crops is increasing day-to-day. All these crops are grown in both Kharif and Rabi seasons. During the plan periods the growth of these crops are increasing due to the adoption of green revolution. The total area under crops in Rayalaseema during 2014-15 is 28.54 lakh hectares where as it is 67.39 lakh hectares in the year 2014-15.

Groundnut

Groundnut is generally shown under rain fed conditions. The area cultivated under this crop is 8.32 lakh hectares in 2014-15, as against 11.10 lakh hectare in 2013-14, which shows a decrease of 27.8 percent. The production of Groundnut was 83.23 lakh tonns during 2014-15 as against 7.39 lakh tonns in 2013-14, marginally an increase of 3.90 percent due to an decrease in the area and productivity in the year 2014-15. The average yield rate of Groundnut was 470 kgs/hectare in 2014-15 as against 660 kgs per hectare in 2013-14 revealing an increase of 26.8 percent.

Sugarcane

Sugarcane crop is mostly grown in Anantapur and Chittoor districts. This crop accounted for 5.4 percent of the total cropped area in the state during 2014-15. Chittoor district is above 45 percent of share to total area under this crop. The area under sugarcane was 12.44 lakh hectares during 2014-15 as against 27.42lakh hectares in 2013-14, which shows a decrease 55 percent, due to favourable seasonal conditions. The production of canewas22.05lakh tons during 2014-15 as against 27.52 lakh tons in 2013-14, recording an increase by 10.26 percent. The average yield rate of sugarcane was 860 kgs per hectare in 2014-15 against 720 kgs in 2013-14, showing an increase by 15.2 percent.

Analysis

In this paper trends, growth and instability in cropping area, production and yield of the selected commercial (sugarcane & groundnut) crops' in Rayalaseema region with special reference to Kadapa, Kurnool districts.To examine the growth and instability, both the linear model and log-linear models (i.e., exponential) are adopted. To find average annual growth rates in all aspects (area, production and yield) the linear growth (LGR) and log-linear growth

(CGR) models are adopted. T-test of statistic carried out (given in methodology) to test the significance in growth.

Anantapur:

Groundnut -Yield:

The calculated linear regression equation for groundnut yield in Anantapur district is

$Y=835.16-16.535*t$	L.G.R= -2.666%	C.V = 57.504%

The estimated value of 'b' is -16.535. The negative and significant value of 'b' reveals that there is a decreasing trend in the yield of groundnut in Anantapur district. This value expresses that on average, 16.5 kilograms are falling
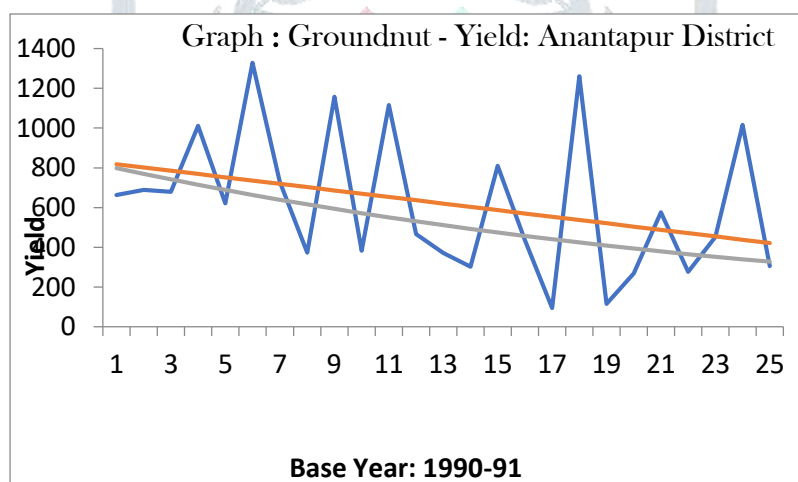
every year. It is a significant decrease in groundnut yield. The linear growth rate is found as -2.666 percent. This rate shows that the average annual decline in growth of yield of groundnut in the district is 2.7 percent. The value of the intercept term i.e., 'a' is 835.16. The coefficient of variation is 57.504 percent. Therefore, the instability in groundnut yield in Anantapur is 57.5 percent.

Chittoor

Groundnut -Yield:

The estimated equation of linear regression for groundnut yield in Chittoor district is

| $Y = 1190.6 - 11.292*t$	L.G.R = −1.081%	C.V = 25.659%

It the above equation, the estimated value of regression coefficient is negative and significant ('b' is -11.292). This value reveals that there is a significantly decreasing trend in the yield of groundnut in Chittoor district. On average, 11.3 kilograms are decreasing every year in the study period. It is a significant decrease in groundnut yield. The linear growth rate is found as -1.081 percent. This rate shows that the average annual fall in growth of yield of groundnut in the district is 1 percent. The value of the intercept term i.e., 'a' is 1190.6. The coefficient of variation is 25.659 percent. The instability is 25.66 percent.

Graph: Groundnut - Yield: Chittoor District

Base Year: 1990-91
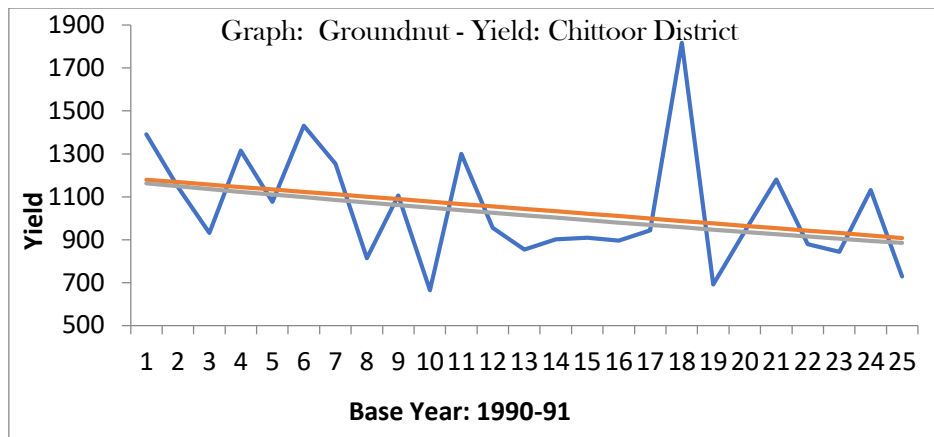
Anantapur:

Sugarcane - Yield:

The estimated linear regression for sugarcane yield in Anantapur district is

Y =52684.78 +120.647t	L.G.R = 1.666%	C.V =25.438 %

Graph: Sugarcane- Yield: AnantapurDistrict
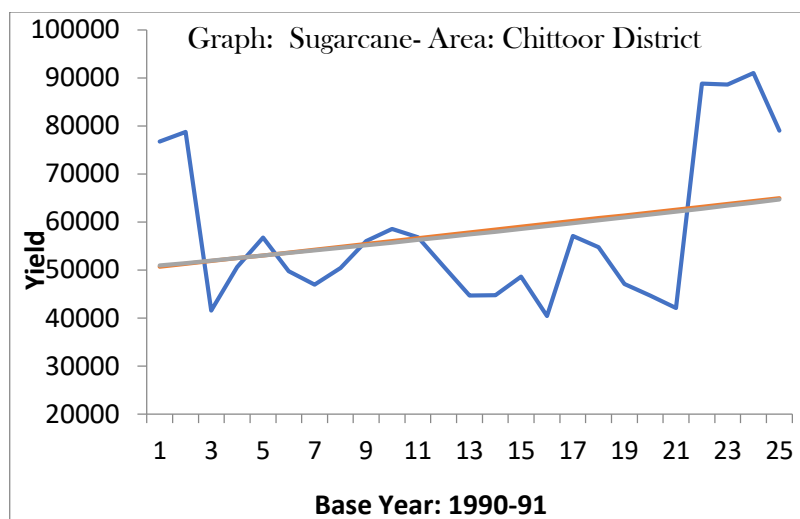
Base Year: 1990-91
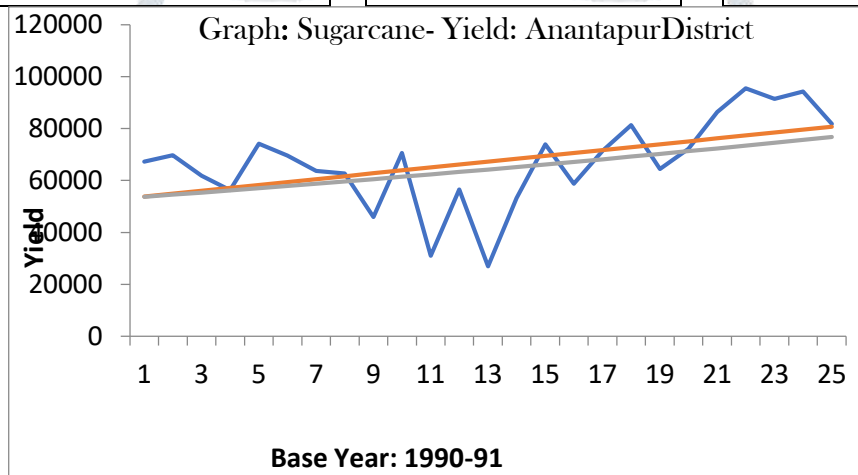
From the above equation, the estimated regression coefficient 'b' is 120.647. The positive value of 'b' display that there is an increasing trend in the yield of sugarcane in Anantapur district. It shows that on average, 120.6 kilograms are increasing every year. It is observed to be an insignificant increase in cane yield. The Linear growth rate is found as 1.666 percent. Therefore, the average annual growth in yield of sugarcane in the district is 1.7 percent. The coefficient of variation reveals that there was 25.438 percent of deviation occurred throughout the study period i.e.25.4 percent instability was recorded in cane yield. It is noticed, that the cane cultivation in Anantapur district is poor, since, the area and production trends record's a negative trend. But the trend in cane yield is positive. It is the effect of new Technology and High Yield Verities in significant crop.

Chittoor:

Sugarcane - Yield:

The probable equation of linear regression for sugarcane yield in Chittoor district is

Y = 50095.59 + 595.179*t	L.G.R =1.029%	C.V = 27.671%

Graph: Sugarcane- Area: Chittoor District

Base Year: 1990-91

From the above equation, the estimated value of 'b' is 595.179. The positive value of 'b' reveals that there is an increasing trend in the yield of sugarcane in Chittoor district. This value display that on average, 595 kilograms are increasing every year. It is a significant increase in sugarcane yield. The linear growth rate is found as 1.029 percent. This rate shows that the average annual growth in yield of sugarcane in the district is 1 percent. The value of the intercept term i.e., 'a' is 50095.59. The coefficient of variation is 27.671 percent, i.e. of instability was recorded.Finally, it is observed though the area and production of sugarcane crop is significantly negative, the cane productivity is significantly positive. This is possible by introducing the HYV in cane cultivation. Practically, the produced sugarcane in the district is used to produce jaggery.

Measures to improve productivity

1. Moving surplus water into the tanks that ensures farmers can continue crop like sugar cane and ground nuts.
2. The overall growth pattern of groundnut yield indicated a downward trend, so improving technologies are to be introduced in these districts.
3. Incentives for groundnut can be increased to move the farmers' attitude towards groundnut cultivation.
4. An understanding of the long run price elasticities facilitates the formulation of an appropriate agricultural price policy for growth and stability.
5. To improve the productivity of sugarcane modern hybrid methods in agriculture to be introduced.

CONCLUSION:

Though the region is rainfed, by transforming the water from surplus tanks to scarcity tanks, farmers can be enabled to increase the productivity of commercial crops in this region. For this awareness among farmers and government proper implementation of policies and review and revision is needed from time to time.

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