

Regionwise Compound Growth Rates in Area, Production and Productivity of *Kharif* Groundnut in Maharashtra

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ABSTRACT: Groundnut (*Arachis hypogaea* L.) is an annual legume crop grown in semi-arid regions of the world. It is the world's fourth most important source of edible oil and third most important source of vegetable protein. In India, groundnut is the principal oilseed crop, occupying an area of 6.4 million hectares with a production level of nearly 6.7 million tonnes of nuts-in-shell. It accounts for 33.5 per cent of the total area under oilseeds and 36.3 per cent of total oilseeds production. The main objectives of the study was to examine the regionwise compound growth rates in area, production and productivity of *kharif* groundnut in Maharashtra state over different time periods viz; Period-I (1990-91 to 2001-02), Period-II (2002-03 to 2012-13) and overall period (1990-91 to 2012-13). The growth in the area, production and productivity of *kharif* groundnut was estimated by using the compound growth function of the non linear form. The study analyzed that area, production and productivity of *kharif* groundnut had decreased during the study Period.

The decrease in production of *kharif* groundnut in Vidarbha, Marathwada and Western Maharashtra region during the period-I, II and overall Period was due to the increase in acreages under other oilseed specially soybean and other valuable cash crops, lack of irrigation facilities, no use of plant nutrients, prevailing climatic conditions. In case of Konkan region, the increase in production of *kharif* groundnut in Maharashtra during overall Period was relatively more as compared to Period-I and II. This was due to the increase acreages under *kharif* groundnut.

The study suggests that, the groundnut crop can be another pillar of agricultural development in the Konkan region and the efforts should be made to improve the productivity of *kharif* groundnut in order to increase *kharif* groundnut production in Vidarbha, Marathwada and Western Maharashtra region of Maharashtra state.

Key words: Groundnut, Production, Compound Growth Rate, Maharashtra.

INTRODUCTION

Groundnut ranks first in India among oil seed crops. It covers 45 percent of area and accounts for 55 percent of production of the total oil seeds. India is rated as the third largest producer of groundnut in the world with annual production of over 5-6 million tons^[5]. Gujarat, Andhra Pradesh, Tamil Nadu and Karnataka are the leading producers in the country and accounts for nearly 75 percent of the total output^{[2],[4]}. Groundnut contributes to nearly 25 percent of total oil seed production in the country. Nearly 75 percent output occurs in June-September and the rest during November-March known as *kharif* and summer seasons respectively^[1].

Though the growth in area under some major oilseeds has been almost stagnated in Maharashtra, the growth in production and yield of major oilseeds has been magnificent over last 3 decades. Though the

growth in production and yield of major oilseeds has been satisfactory since 1950's, significant level of variability in these variables has been observed over the years. The extent of variability in area under total oilseeds has been much lower than that of production and yield of total oilseeds in Maharashtra. However, the growth in area under *kharif* groundnut has been poor in the state^[7].

Since the main objective of the present study was, to estimate growth rate of *kharif* groundnut in Maharashtra state in general, and those in different divisions in particular, it was necessary to examine whether changes had occurred in *kharif* groundnut acreage in absolute terms during the different time periods selected for the study in various regions and for the entire state. Similarly, whether changes had occurred in productivity and production of *kharif* groundnut in different districts of each of the region

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were also examined. What so ever changes had occurred in area, production and productivity of *kharif* groundnut in different regions and what its rate of change was also evaluated.

The studies undertaken by research workers at various times mostly related to cereal crops like *kharif* groundnut and other food grain crops, very limited work has been done on groundnut specially on *kharif* groundnut [3]. Thus, considering the importance and need, the present study has been taken. Considering the above facts it is necessary to analyzed the "regionwise compound growth rates in area, production and productivity of *kharif* groundnut in Maharashtra".

METHODOLOGY

The present study was utilized the time series data (1990-91 to 2012-2013) on area, production and productivity of *kharif* groundnut was collected from various publications and websites of Directorate of Economics and Statistics Government of India, Agricultural Statistics at a glance and Bureau of Economics and Statistics of Maharashtra state.

Specification of time periods

To facilitate proper understanding of impact *kharif* groundnut cultivation on Maharashtra with regard to percentage increase in area, production and productivity, the overall period of 23 years i.e. from 1990-91 to 2012-13 were divided into two sub periods and one overall period as indicated below.

Period-I : 1990-91 to 2001-02

Period-II : 2002-03 to 2012-13

Overall period : 1990-91 to 2012-13

To understand the overall performance of *kharif* groundnut over the entire period of 23 years, i.e. 1990-91 to 2012-13, it were considered as one period.

Analysis of data

Functional analysis

In order to analyze the changes in area, production and productivity of *kharif* groundnut in Maharashtra during period I, period II and as well as overall period, annual compound growth rates were estimated. In the present study, the compound growth rates in area, production and productivity of *kharif* groundnut production in Maharashtra were estimated by fitting exponential type of equation.

$$Y = ab^t$$

Where,

Y = area, production and productivity

t = time period

b = regression coefficient

a = intercept

$$CGR = (\text{Antilog } b - 1) \times 100$$

The simple tabular analysis was done for obtaining the results on changes in area, production and productivity of *kharif* groundnut in Maharashtra.

RESULTS AND DISCUSSION

Trends in area, production and productivity of *kharif* groundnut in Maharashtra

Though the growth in area under some major oilseeds has been almost stagnated in Maharashtra, the growth in production and yield of major oilseeds has been magnificent over last 3 decades. Though the growth in production and yield of major oilseeds has been satisfactory since 1950's, significant level of variability in these variables has been observed over the years. The extent of variability in area under total oilseeds has been much lower than that of production and yield of total oilseeds. However, the growth in area under total oilseeds has been poor in the state [8].

Since the main objective of the present study was to estimate growth rate of *kharif* groundnut in Maharashtra in general, and those in different divisions in particular, it was necessary to examine whether changes had occurred in *kharif* groundnut acreage in absolute terms during the different time Periods selected for the study in various regions and for the entire state. Similarly, whether changes had occurred in productivity and production of *kharif* groundnut in different districts of each of the region were also examined. What so ever changes had occurred in area, production and productivity of *kharif* groundnut in different regions and what its rate of change was also evaluated. The results of the same presented below.

The decade wise data on area, production and productivity of *kharif* groundnut in Maharashtra for the period of last 23 years i.e. from 1990-91 to 2012-13 have been analyzed and changes in area, production and productivity of *kharif* groundnut in Maharashtra for the Period of 23 years have been worked out.

Districtwise and periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut in Vidarbha

From the Table 1, for Period-I, among 11 districts in Vidarbha region there all districts having positive growth in area under *kharif* groundnut. One district

i.e. Akola found negative growth in area (-3.04 per cent), production (-0.66 per cent) and productivity (-0.11 per cent). Four districts namely Amravati, Yavatmal, Wardha and Nagpur observed, negative CGR in area and production but positive growth in productivity. The negative growth in area and production was observed in Amravati, Yavatmal, Wardha and Nagpur district which was -16.19, -23.77, -14.86 and -7.20 per cent in area and -11.91, -21.10, -13.70 and -5.11 per cent in production respectively.

The production increased non significantly in Yavatmal district with non significant decreased in area in Period-II. The growth rates for area of *kharif* groundnut were negative and significant in Amravati and Wardha district, but productivity seems positively non-significant in both districts.

For the overall study period, production decreased due to area decline [3]. The growth rates for area and production of *kharif* groundnut were negative and significant, but productivity seems positively non-significant in Amravati, Yavatmal, Wardha and Nagpur district.

The study revealed that, for Vidarbha region production of *kharif* groundnut has declined due to decrease in area under *kharif* groundnut. The substantial decrease in production has been noticed due to change in climatic conditions and increase in the area under other oilseed crops specially soybean crop, division of district and diversion of cultivated land towards different development activities such as roads, irrigation works and house constructions.

Table 1
Districtwise and periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut in Vidarbha

| Sr. No. | District | CGR (%) | | | | | | | | |
|---------|-------------------------|----------------------------------|---------------------|---------------------|-----------------------------------|----------------------|----------------------|---------------------------------|---------------------|---------------------|
| | | Period-I (1990-91 to 2001-02) | | | Period-II (2002-03 to 2012-13) | | | Overall (1990-91 to 2012-13) | | |
| | | A | P | Y | A | P | Y | A | P | Y |
| 1 | Buldhana | -11.97*** | -13.04*** | -1.20 ^{NS} | -22.78 ^{NS} | -19.69 ^{NS} | -18.82 ^{NS} | -24.70*** | -24.03*** | -9.25 ^{NS} |
| 2 | Akola | -3.04*** | -0.66 ^{NS} | -0.11 ^{NS} | NA | NA | NA | -3.04*** | -0.66 ^{NS} | -0.11 ^{NS} |
| 3 | Amravati | -16.19*** | -11.91*** | 5.04 ^{NS} | -8.77*** | -6.10* | 2.78 ^{NS} | -17.35*** | -16.96*** | 0.43 ^{NS} |
| 4 | Yavatmal | -23.77*** | -21.10*** | 4.15 ^{NS} | -4.89 ^{NS} | 0.87 ^{NS} | 4.97 ^{NS} | -20.07*** | -16.80*** | 2.81** |
| 5 | Wardha | -14.86*** | -13.70*** | 1.24 ^{NS} | -23.84*** | -23.50*** | 0.66 ^{NS} | -19.05*** | -18.40*** | 0.81 ^{NS} |
| 6 | Nagpur | -7.20*** | -5.11* | 2.23 ^{NS} | -7.05 ^{NS} | -3.71 ^{NS} | 3.49* | -9.09*** | -8.19*** | 0.98 ^{NS} |
| 7 | Bhandara [#] | — | — | — | — | — | — | — | — | — |
| 8 | Chandrapur [#] | — | — | — | — | — | — | — | — | — |
| 9 | Gadchiroli [#] | — | — | — | — | — | — | — | — | — |
| 10 | Gondia [#] | — | — | — | — | — | — | — | — | — |
| 11 | Washim [#] | — | — | — | — | — | — | — | — | — |
| | Vidarbha | -12.90*** | -10.90*** | 2.34 ^{NS} | -9.53*** | -6.69** | 2.31 ^{NS} | -11.20*** | -13.30*** | 0.31 ^{NS} |

*, ** and *** indicate significance at 10, 5 and 1 per cent level, respectively.

[#] - No area under this crop has been recorded so far.

Table 2
District and periodwise annual compound growth rates in area, production and productivity of *kharif* groundnut in Marathwada

| Sr. No. | District | CGR (%) | | | | | | | | |
|---------|----------------------|----------------------------------|---------------------|---------------------|-----------------------------------|---------------------|---------------------|---------------------------------|---------------------|---------------------|
| | | Period-I (1990-91 to 2001-02) | | | Period-II (2002-03 to 2012-13) | | | Overall (1990-91 to 2012-13) | | |
| | | A | P | Y | A | P | Y | A | P | Y |
| 1 | Aurangabad | -3.44*** | -4.48 ^{NS} | 0.05 ^{NS} | -5.99** | -4.14 ^{NS} | 1.99 ^{NS} | -5.49** | -3.27 ^{NS} | 2.33 ^{NS} |
| 2 | Parbhani | -8.53*** | -2.70*** | 2.68 ^{NS} | -5.73 ^{NS} | 1.20 ^{NS} | 3.25 ^{NS} | -7.20*** | -1.62*** | -1.30 ^{NS} |
| 3 | Beed | -6.45*** | -4.86 ^{NS} | 1.65 ^{NS} | -9.10*** | -7.40*** | 1.87 ^{NS} | -7.54*** | -6.85*** | 0.74 ^{NS} |
| 4 | Nanded | -9.55*** | -2.19*** | 1.33 ^{NS} | -6.59 ^{NS} | -4.19 ^{NS} | 2.59 ^{NS} | -8.30*** | -2.40*** | 1.35 ^{NS} |
| 5 | Osmanabad | -4.31*** | -3.96 ^{NS} | 0.34 ^{NS} | 0.84 ^{NS} | 3.27 ^{NS} | 2.55 ^{NS} | -3.14*** | -1.35 ^{NS} | 1.84 ^{NS} |
| 6 | Jalna | -15.14*** | -16.20*** | -1.38 ^{NS} | -15.76*** | -17.80*** | -2.54 ^{NS} | -14.12*** | -13.20*** | 1.07 ^{NS} |
| 7 | Latur | -6.24*** | -3.69 ^{NS} | 2.72 ^{NS} | -17.80*** | -11.50* | 7.66** | -10.00*** | -8.84*** | 1.40 ^{NS} |
| 8 | Hingoli [#] | — | — | — | — | — | — | — | — | — |
| | Marathwada | -7.57*** | -6.75** | 0.82 ^{NS} | -7.66*** | -4.64* | 2.56 ^{NS} | -7.11*** | -5.88*** | 1.14 ^{NS} |

*, ** and *** indicate significance at 10, 5 and 1 per cent level, respectively.

[#] - Newly formed district, area so far recorded is under Latur.

Districtwise and periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut in Marathwada

The information of districtwise and Periodwise annual compound growth rates in area, production and productivity of *kharif* groundnut in Marathwada region is depicted in Table 2.

The district wise growth rates of area, production and productivity of *kharif* groundnut in Marathwada region for Period-I revealed that, the production decreased due to decreased in area under *kharif* groundnut crop. The productivity increases non significantly in all districts except Jalna district, and area significantly decreases in all districts of Marathwada region.

In Beed, Jalna district production decreases significantly at 1 percent level of significance, and in Latur at 10 percent level of significance in Period-II. The production declined significantly in Nanded district due to decrease in area. In case of Latur district, production declined due to decrease in area. In case of Aurangabad and Parbhani district, productivity increases non-significantly due to decrease in area under *kharif* groundnut crop.

The area and production *kharif* groundnut in all districts of Marathwada was found negative in overall period. In Marathwada region, during this period division two districts, transfer of cultivated land towards other non agricultural activities and prevalent drought conditions affected the production of *kharif* groundnut in this region. Looking to conditions of scanty rainfall in some parts and seasonality of rainfall

in other parts, Marathwada could be considered as one of the water resource scare zone in Maharashtra.

It could be conclude that, the decline in area under *kharif* groundnut during overall period may be due to the shifting of area towards cotton and soybean crops as a substitution crop^[9]. As a result of decline in area, the production has declined in Marathwada region.

Districtwise and periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut in Western Maharashtra

It is revealed from the Table 3 that, in Period-I, the compound growth rate of area was highly significant in Nashik, Dhule, Jalgaon and Ahmednagar district at 1 percent level of significance and production was positive but non-significant in Pune and Kolhapur district. Whereas, the production has declined due to decline in both area and productivity in Jalgaon district, this may due to increase in area under Banana crop.

For period-II, the production increased due to productivity improvement in Solapur and Sangli districts. The compound growth rate of area was highly significant in Nashik, Dhule, Jalgaon, Pune, Kolhapur, Satara and Western Maharashtra. Whereas, production seems positive but significant in Jalgaon and Kolhapur districts. As well as, Productivity was negative and non-significant in Kolhapur and Nashik districts.

For overall Period, it is notice that, in Ahmednagar district, the production increased due to area expansion and productivity improvement. Except Ahmednagar district, all the districts as well as Western Maharashtra region show decreasing trend

Table 3
District and periodwise annual compound growth rates in area, production and productivity of *kharif* groundnut in Western Maharashtra

| Sr. No. | District | CGR (%) | | | | | | | | |
|---------|---------------------|----------------------------------|---------------------|---------------------|-----------------------------------|---------------------|---------------------|---------------------------------|---------------------|---------------------|
| | | Period-I (1990-91 to 2001-02) | | | Period-II (2002-03 to 2012-13) | | | Overall (1990-91 to 2012-13) | | |
| | | A | P | Y | A | P | Y | A | P | Y |
| 1 | Nashik | -2.09*** | -1.95** | 0.62 ^{NS} | -2.32*** | -2.81 ^{NS} | -0.49 ^{NS} | -0.28 ^{NS} | -0.33 ^{NS} | 0.86 ^{NS} |
| 2 | Dhule | -14.00*** | -17.80** | -4.93 ^{NS} | -7.82*** | -6.94 ^{NS} | 0.96 ^{NS} | -6.80*** | -6.35*** | 0.24 ^{NS} |
| 3 | Jalgaon | -16.90*** | -18.40*** | -1.79 ^{NS} | -15.80*** | -13.10*** | 3.20* | -14.60*** | -12.70*** | 2.28** |
| 4 | Pune | 1.16* | 0.02 ^{NS} | -1.15 ^{NS} | -2.82** | -2.36 ^{NS} | 0.47 ^{NS} | -0.44 ^{NS} | -2.50*** | -2.06*** |
| 5 | Ahmednagar | -7.39*** | -7.33*** | 0.09 ^{NS} | -3.13 ^{NS} | -2.04 ^{NS} | 1.20 ^{NS} | 5.31*** | 6.78*** | 1.38 ^{NS} |
| 6 | Solapur | -8.30** | -5.33 ^{NS} | 3.16 ^{NS} | -7.44 ^{NS} | 4.84 ^{NS} | 1.99 ^{NS} | -6.65*** | -4.36* | 2.67** |
| 7 | Kolhapur | -0.12 ^{NS} | 0.80 ^{NS} | 0.14 ^{NS} | -2.59*** | -4.00** | -1.44 ^{NS} | -0.72*** | -2.33*** | -1.62** |
| 8 | Satara | -2.31* | -0.32 ^{NS} | 2.04 ^{NS} | -3.14*** | -1.17 ^{NS} | 2.03 ^{NS} | -1.51*** | -1.33 ^{NS} | 0.18 ^{NS} |
| 9 | Sangli | -2.11* | -0.59 ^{NS} | 1.55 ^{NS} | -2.68 ^{NS} | 1.27 ^{NS} | 4.05 ^{NS} | -2.70*** | -3.60*** | -1.93 ^{NS} |
| 10 | Nandurbar | NA | NA | NA | -5.11** | -1.85 ^{NS} | 3.46 ^{NS} | -5.11*** | -1.85 ^{NS} | 3.46 ^{NS} |
| | Western Maharashtra | -3.88*** | -2.02 ^{NS} | -0.04 ^{NS} | -3.26*** | -2.58 ^{NS} | 1.41*** | -2.57*** | -2.77*** | 1.28 ^{NS} |

*, ** and *** indicate significance at 10, 5 and 1 per cent level, respectively.

in production due to significant decrease in area in the entire period of study.

From the foregoing discussion it is clearly indicated that, production and productivity of *kharif* groundnut in all the districts of Western Maharashtra region might be negative in Period-I,II and Overall Period due to division of districts and transfer of cultivated land towards different development activities.

Districtwise and periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut in Konkan

The annual compound growth rates in area, production and productivity of *kharif* groundnut in four *kharif* groundnut growing districts and Konkan region as a whole during Period I, Period II and overall Period has estimated and presented in Table 4.

The district wise growth rates of area, production and productivity of *kharif* groundnut in Konkan region, for Period-I revealed that, production has increased non significantly but, area increased significantly in Thane and Sindhudurg district i.e. 3.26 and 2.52 per cent respectively. In case of Ratnagiri district, productivity decreased due to decline in area as well as production of *kharif* groundnut.

In Thane district, the production increased due to increase in production in Period-II. While, in case of Sindhudurg district significant increase in growth rates of area, production and productivity was noticed. The production declined in Raigad district due to decrease in area under *kharif* groundnut. Area decreases non significantly Ratnagiri district. This was mostly because of bifurcation of Ratnagiri district and diversion of cultivated land towards different developmental activities such as roads, irrigation works, industrial establishment and house constructions which has impact on area, production and productivity.

At the overall level, the production of *kharif* groundnut in Sidhudurg had mainly increased due to area expansion and productivity improvement. The non significant increase in growth rates of area and production of *kharif* groundnut was noticed in

Ratnagiri and Thane district, while significant decline in area was observed in Raigad district.

The study revealed that, in Konkan region, the area and production of *kharif* groundnut had significantly increased at the rate of 2.08, 3.17 per cent per annum respectively for the overall Period of 23 years. Results conclude that, *kharif* groundnut crop can be another pillar of agricultural development in the Konkan region^[9].

Districtwise and Periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut in Maharashtra

As discussed earlier, the area and production of *kharif* groundnut have decreased since the formation of Maharashtra State. But the rate of decreased in area and production of *kharif* groundnut was not uniform during different decades in the State as well as in different regions and districts. Also, the productivity of *kharif* groundnut has not only showed decreasing trends over a Period of time but also varied greatly among the different districts and regions. The districtwise and regionwise compound growth rates of these variables have been examined for the Period 1990-91 to 2012-13. The regionwise and Periodwise annual compound growth rates of area, production and productivity of *kharif* groundnut are presented in Table 5, for all individual region and state as a whole.

Area and production in Vidarbha and Marathwada region decreasing significantly, but productivity increases non significantly in Period I,II and overall Period. In case of Western Maharashtra, production decreases due decline in area under *kharif* groundnut crop. It indicates that, *kharif* groundnut crop is replaced by other major oilseed crop and food grain crops.

The area, production and productivity of *kharif* groundnut had fluctuated widely during the Period under consideration in all the districts, regions and state as a whole. The area and production of *kharif* groundnut decreased at the rate of -3.90 per cent and -3.48 per cent per annum, respectively, during overall Period. However, the productivity of *kharif* groundnut has increased non

Table 4

District and periodwise annual compound growth rates in area, production and productivity of *kharif* groundnut in Konkan region

| Sr. No. | District | CGR (%) | | | | | | | | |
|---------|------------|----------------------------------|---------------------|---------------------|-----------------------------------|---------------------|---------------------|---------------------------------|---------------------|---------------------|
| | | Period-I (1990-91 to 2001-02) | | | Period-II (2002-03 to 2012-13) | | | Overall (1990-91 to 2012-13) | | |
| | | A | P | Y | A | P | Y | A | P | Y |
| 1 | Ratnagiri | -4.56** | -6.88** | -9.21*** | -2.49 ^{NS} | -1.87 ^{NS} | 3.33** | 1.39 ^{NS} | 1.50 ^{NS} | -2.78 ^{NS} |
| 2 | Raigad | -3.85 ^{NS} | -1.80 ^{NS} | -3.17 ^{NS} | -3.10 ^{NS} | -2.49 ^{NS} | -3.41 ^{NS} | -1.67* | -1.27 ^{NS} | -2.81 ^{NS} |
| 3 | Thane | 3.26*** | 2.71 ^{NS} | -1.43 ^{NS} | 2.73 ^{NS} | 3.37*** | 2.61* | 2.83 ^{NS} | 1.54 ^{NS} | -1.08 ^{NS} |
| 4 | Sindhudurg | 2.52*** | 0.15 ^{NS} | -2.43 ^{NS} | 4.17*** | 7.52*** | 3.34** | 2.79*** | 4.25*** | 1.36 ^{NS} |
| | Konkan | 1.18* | -1.13 ^{NS} | -4.85** | 2.78** | 5.61*** | 2.41 ^{NS} | 2.08*** | 3.17*** | -2.02 ^{NS} |

*, ** and *** indicate significance at 10, 5 and 1 per cent level, respectively.

Table 5
District and periodwise annual compound growth rates in area, production and productivity of kharif groundnut in Maharashtra

| Sr. No. | District | CGR (%) | | | | | | | | |
|---------|---------------------|----------------------------------|---------------------|---------------------|-----------------------------------|---------------------|--------------------|---------------------------------|-----------|---------------------|
| | | Period-I (1990-91 to 2001-02) | | | Period-II (2002-03 to 2012-13) | | | Overall (1990-91 to 2012-13) | | |
| | | A | P | Y | A | P | Y | A | P | Y |
| 1 | Vidharbha | -12.90*** | -10.90*** | 2.34 ^{NS} | -9.53*** | -6.69** | 2.31 ^{NS} | -11.20*** | -13.30*** | 0.31 ^{NS} |
| 2 | Marathwada | -7.57*** | -6.75** | 0.82 ^{NS} | -7.66*** | -4.64* | 2.56 ^{NS} | -7.11*** | -5.88*** | 1.14 ^{NS} |
| 3 | Western Maharashtra | -3.88*** | -2.02 ^{NS} | -0.04 ^{NS} | -3.26*** | -2.58 ^{NS} | 1.41*** | -2.57*** | -2.77*** | 1.28 ^{NS} |
| 4 | Konkan | 1.18* | -1.13 ^{NS} | -4.85** | 2.78** | 5.61*** | 2.41 ^{NS} | 2.08*** | 3.17*** | -2.02 ^{NS} |
| | Maharashtra | -5.37*** | -3.01** | 0.03 ^{NS} | -3.85*** | -2.74* | 1.85** | -3.90*** | -3.48*** | 0.29 ^{NS} |

*, ** and *** indicate significance at 10, 5 and 1 per cent level, respectively.

significantly by only 0.29 per cent per annum. This indicates that, the production of *kharif* groundnut has decreased mainly due to crop diversification.

The performance of *kharif* groundnut crop in respect of area and production has decreased and not satisfactory in all the regions except Konkan region. But, it was poor in respect of productivity improvement. The productivity was relatively increased more in Period- I and II (0.03 and 0.29 percent per annum respectively) for overall Period however it was found to be non significant. In general, the area and production of *kharif* groundnut increased at increasing rates during Period II and overall Period in Konkan region and however it was declined during Period II and overall Period in Vidarbha, Marathwada and Western Maharashtra region.

CONCLUSIONS

1. State as whole, the area under *kharif* groundnut had decreased in all the regions except Konkan region. The area and production of *kharif* groundnut were negatively significantly at the rate of -3.90 and -3.48 percent per annum, respectively in the state. The growth rates in area and production of *kharif* groundnut were positive and significant in Konkan region, while those were negatively significant for Marathwada, Vidarbha and Western Maharashtra region.
2. The study has revealed that, area under *kharif* groundnut in Maharashtra and especially in all districts and states as whole has been decreased during period-I, II and overall period, this might be due to shift in acreages under *kharif* groundnut to other high value cash crops, lack of irrigation, no use of plant nutrients, prevailing climatic conditions. The performance of *kharif* groundnut in area and production was poor mainly due to the productivity improvement and area decline.

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