Original Research Article

Trends in Area, Production, and Productivity of Groundnut in Rajasthan

ABSTRACT

Groundnut is a major oil seed crop of the India and Rajasthan state is second highest groundnut producing state (2019-20). The present study on trends in area, production, and productivity of groundnut in Rajasthan. Data was collected from various sources like INDIASTAT and Rajasthan state, department of agriculture. Data is analysed with help of Statistical Package for the Social Sciences (SPSS). Average area, production and productivity of groundnut from 1990-91-2019-20 is 352 .12 thousand hector and 513.40 thousand MT and 1351 kg/ha respectively. It was concluded that the compound growth rates of area, production and productivity of groundnut is found positive and significant (R = 0.652**, 0.940**and 0.603** respectively) in increasing trend with CAGR is 3.2, 6.4 and 2.8 per cent respectively

Keywords: *SPSS, CAGR, Groundnut, Trend, Area, Production, Productivity*

1. Introduction

Groundnut is an important oilseed crop of the world. Globally it knows peanut or monkey nut and it also is called the 'King' of oilseeds. This plant is originated from Brazil and cultivated in the tropical, subtropical, and warm temperate zone of the world. The botanical name of groundnut is *Arachis hypogaea L.* is derived from two Greek words, *Arachis* meaning a legume and *hypogaea* meaning below ground. Groundnut being the important crop of Rajasthan, It has the second largest producer state after Gujarat, with 20 per cert production share in 2018-2019 *(FAO, 2020)*. Bikaner and Jodhpur are the highest groundnut producer district in the Rajasthan state and they contribute 30 percent and 15 percent production share respectively in total production*(INDIASTAT, 2020)*. The demand for groundnut and confectionary-based groundnut products is highly increased thought out worldwide from last decade. Rajasthan state has a very high potential in production with the 2nd rank but in terms of processing and export its ranks 7th as compared to other states in India (*APEDA, 2020)*. Farmers are selling their produce to the nearest market; they do not try to enter in export because of a lack of awareness among farmers about its economic and marketing opportunities.

2. Review of Literature

Reddy and Bantilan (2012) studied and found that India is a major producer of groundnut but, imports a near to half its domestic consumption needs of edible oils. Due to the uncertain production environment in rainfed cultivation, uneven production and inefficiencies in the processing are the main problems. Small scale processers are unable to survive in this uncertain situation so far because of

the high cost of processing initially. They need sizeable working capital to maintain the inventory of groundnuts needed to run the units after the peak market arrivals.

A. K. Bharti et al. (2012) Studied growth rate pattern and technical impact of oil seed in Uttar Pradesh.specilaiy The area under oilseeds in the State has registered a positive growth rate of about 1.04 percent annually. The second period has registered a nominal downfall in the growth of area, i.e. by 0.21 percent per annum. On the other hand, area has increased as the rate of 0.79 percent annually during the first period. An overall positive growth rate of production by about 2.68 percent has been observed. It was more (1.07%) in second as compared to that of about 0.97 percent in first period. The productivity of total oilseeds has registered a positive growth rate of about 1.63 percent annually. This positive growth rate was more prominent (1.28%) during the second period as compared to that of about 0.17 percent during first period. Growth in productivity has realized some satisfaction level of its production in the State.

Choudhary *et al.* (2017) found that the compound growth rates area and production, and productivity of groundnut were analyzed, the area and production were negative significant, while productivity was positive but non-significant. The per hectare cost of cultivation and B: C ratio is calculated. Per quintal cost of marketing and major items marketing costs like packaging charges, transport charges, and commission charges were calculated. The study reported that non-availability of labor and other inputs at peak period, high cost of key inputs, low price to produce, and lack of technical knowledge are the major constraints faced by farmers.

Agashe DR et al. (2018) he found the trends of area, production and productivity of groundnut in different districts of Chhattisgarh. The area of groundnut is positively and significantly increasing i.e. (R=0.70**) due to increasing irrigation facilities and motivating the farmer for use of low cost input technology for groundnut crop. The production The production of groundnut is positively and significantly increasing i.e (R = 0.73 all the districts of Chhattisgarh. The productivity pattern of groundnut is positively and significantly increasing in all the districts i.e (R = 0.68**), due to increased fertilizer and pesticide consumption by the farmer and introduction of high yielding variety (HYP).

3. Materials and Methods

The present study is carried out in the state Rajasthan. The long term groundnut data in regard to area, production and productivity for groundnut are grown during kharif and rabi seasons of Rajasthan were collected from the published records of department of Agriculture, Government of Rajasthan, Data were obtained for the period 1990-91 to 2019-20 and were used in present study. Trends in area, production and productivity of groundnut was calculating in the study area.

3.1 Objectives of the study

To study the trends in area, production, and productivity of groundnut in Rajasthan

3.2 Statistical analysis

The data was assessed with the help of SPSS, SD, level of significance, compound growth rate model etc. are given below.

3.2.1 Compound growth rate model

$Y_t = ab^t u$
Where,
Y_t = Dependent variable in period t (area/yield/production)
a = constant
b^t = (1+r) and 'r' is the compound growth rate
r = (Antilog b -1) ×100
t = time variable (1, 2 .....n)
u = error term
The above model in the Logarithmic form is expressed as,

$$\text{Log } Y_t = \log a + t(\log b) + \log u$$

3.2.2 Coefficient of Variation:-

$$\text{C. V. (\%)} = \frac{\text{Standard deviation}}{\text{Mean}} \times 100$$

The slope indicates the trend of area, production and productivity over the study period.

4. Result and Discussion

The time trend pattern of the area, production and productivity of groundnut in Rajasthan is shown in Fig. 1. From the last 30 years' data shows that area, groundnut crop suddenly increased from 1990 to 2020. The highest area under groundnut was observed in the year 2019-2020 (739.02 thousand ha) whereas, the lowest area was observed in the year 2001-02 (195 thousand ha). In terms of the production and productivity, highest is shown in the year 2019-20. (1619.33 thousand MT) and productivity is 2191 kg/ha. In the regard production and productivity, from last 30 years are shows incising trend.

Table 1. Area, Production, and Yield of Groundnut in Rajasthan: 1990-91 to 209-20

Year	Area('000 ha)	Production('000 MT)	Productivity(Kg/ha)
1990-1991	231.8	218.4	942
1991-1992	248.3	334	798
1992-1993	288	242.8	1116
1993-1994	288	287.4	1116
1994-1995	288	249.9	1116
1995-1996	288	334	1116
1996-1997	280	328	1560
1997-1998	288	245.3	1116
1998-1999	288	328.9	1116
1999-2000	288	274.7	1116
2000-2001	195	180.8	694.8
2001-2002	288	242.6	1116
2002-2003	241.8	166.1	687
2003-2004	288	212	1116
2004-2005	287.8	446.8	1552
2005-2006	288	317	1116
2006-2007	288	334	1116
2007-2008	288	276.3	1116
2008-2009	321.5	536.8	1670

2009-2010	326	354.5	1087
2010-2011	418.2	805.3	1926
2011-2012	288	334	1116
2012-2013	398.5	617.3	1549
2013-2014	462	900.9	1950
2014-2015	500.8	1011.2	2019
2015-2016	516.85	1048.72	2029
2016-2017	556.09	1140.61	2051
2017-2018	640.57	1259.36	1966
2018-2019	673.37	1382.32	2053
2019-2020	739.02	1619.33	2191
Mean	**352.62**	**513.40**	**1351.06**
SD	**137.60**	**398.31**	**444.42**
CV	**39.024**	**77.58**	**32.893**

Source: INDIASTAT, 2022

4.1 Trends in Area

During the period 1990-91 to 2019 -20 the actual area of production showed a growth rate 3.2 per cent (Table no.2) is significant (R =0.652**) at 5% level of significance. It indicates the production has increased. Figure 1 below shows actual trends of area of groundnut.

Fig.1 Trends in Area of Groundnut in Rajasthan

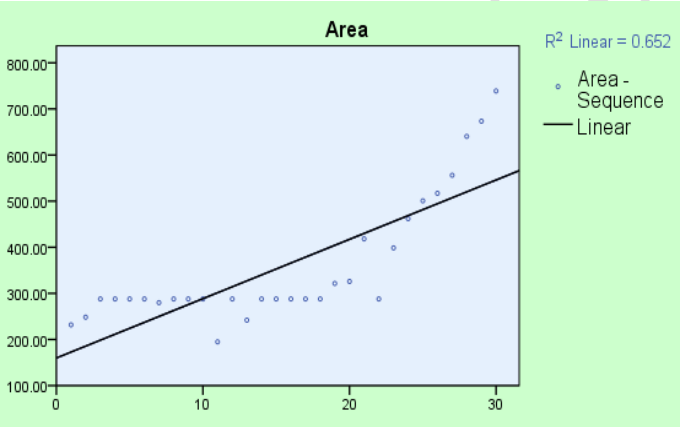

Table 2. Compound growth rates Area Production of Groundnut in Rajasthan

'F' value	60.07
R2	0.652**
CAGR	3.2

(Source: Researcher's own computation from Secondary data)
CAGR- Compound growth rate per cent per annum.
**-Significant at 5 % level of significance

4.2 Trends in Production

During the period 1990-91 to 2019 -20 the actual production showed a growth rate of 6.4 per cent (Table no. 3) is significant (R =0.940**) at 5% level of significance. It shows indicates the production has increased. Figure 2 below shows actual trends of area of groundnut.

Fig.2 Trends in production of Groundnut in Rajasthan

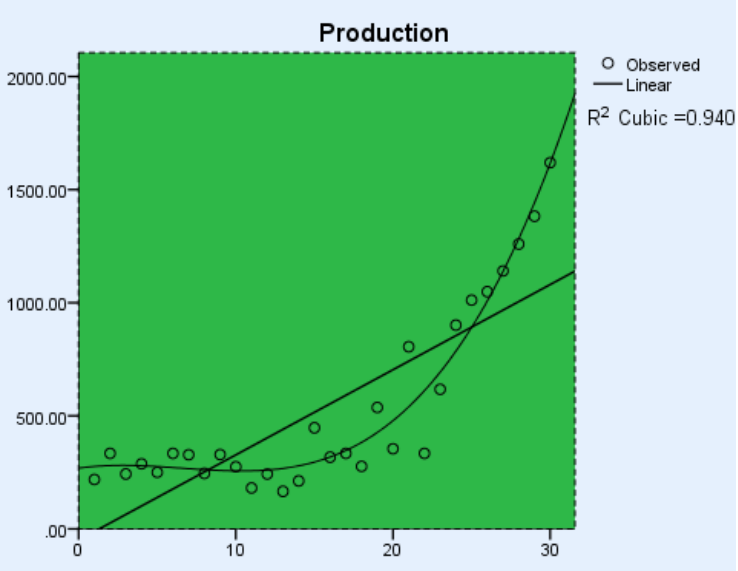

Table 3. Compound growth rate of Production of Groundnut in Rajasthan

'F' value	54.67
R2	0.940**
CAGR	6.4

(Source: Researcher's own computation from Secondary data)
CAGR- Compound growth rate per cent per annum.
**-Significant at 5% level of significance

4.3 Trends in Productivity

During the period 1990-91 to 2019 -20 the growth rate of productivity is 2.4 per cent (Table no. 4) is significant (R =0.603**) at 5% level of significance. It indicates the productivity has increased. Figure 3 below shows actual trends of productivity of groundnut.

Fig.3 Trends in area of productivity of Groundnut

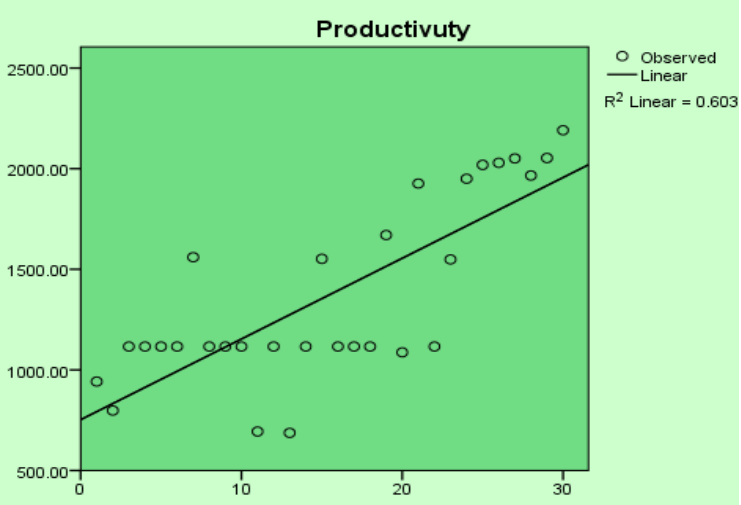

Table 4. Compound growth of Productivity of Groundnut in Rajasthan

'F' value	33.886
R2	0.603**
CAGR	2.8

(Source: Researcher's own computation from Secondary data)
CAGR- Compound growth rate per cent per annum.
**-Significant at 5% level of significance;

5. Conclusion

The study was based on production of groundnut in of Rajasthan during 1990-91-2019-20. It was found that Rajasthan is second Largest producing state (2019-20). Average area, production and productivity of groundnut from 1990-91-2019-20 is 352 .12 thousand hector and 513.40 thousand MT and 1351 kg/ha respectively. It was concluded that the compound growth rates of area, production

and productivity of groundnut is found positive and significant (R = 0.652**, 0.940**and 0.603** respectively) in increasing trend with CAGR is 3.2, 6.4 and 2.8 per cent respectively.

6. References

Reference to a journal:

1. Bhagawan, B.S., & Ramandeep, S. (2019). Role of ICT in agriculture sector. *Journal of Pharmacognosy and Phytochemistry, 8*, 665-669.
2. Bharti, A. K., Sharma, M. K., Sharma, H. L., Sisodia, B. V. S., & Dube, L. K. (2012). Pattern of growth and technological impact on oilseeds production in Uttar Pradesh. *Journal of Crop and Weed*, *8*(2), 1-6.
3. Celik, S., Karadas, K., & Eyduran, E. (2017). Forecasting the production of Groundnut in Turkey using Arima model. *World*, *17373490*(150819), 25.
4. Choudhary, R., Rathore, D. S. and Sharma, A. (2017). An economics analysis of production and marketing of groundnut in porbandar district of Gujarat. *Economic Affairs*, 62(3) 547-553.
5. Dr, A., Sastri, A., Bobade, P., & Agashe, R. (2018). Trends of area, production and productivity of groundnut in different districts of Chhattisgarh. Journal of Pharmacognosy and Phytochemistry, 7(4), 1254–1259.
6. Gowda, C. L. L., Rao, P. P., & Bhagavatula, S. (2009). Global trends in production and trade of major grain legumes.
7. Kanta Kaushik, K. (1993). Growth and instability of oilseeds production. *Indian Journal of Agricultural Economics*, *48*(902-2018-3229), 334-338.
8. Madhusudhana, B. (2013). A survey on area, production and productivity of groundnut crop in India. *IOSR journal of Economics and Finance*, *1*(3), 1-7.
9. Painkra, A. K., Kumar, D., & Atree, N. (2021). An analysis of trends, growth and B: C ratio in Surguja district of Chhattisgarh state with special reference to groundnut crop.
10. Patel, D. A. (1966). Growth of Groundnut in Gujarat State. *Indian Journal of Agricultural Economics*, *21*(902-2016-67163), 223-226.
11. Reddy, A. A and Bantilan, M. C. S. (2012). Competitiveness and technical efficiency: Determinants in the groundnut oil sector of India. *Food Policy*, 37(3), 255-263.
12. S. B. Bhusanar and Ramandeep Singh. e-NAM: A Reforming Agriculture Market. Bull. Env. Pharmacol. Life Sci., Vol 8 [2] January 2019: 21-24
13. Singh Ramandeep and Bhusanar Shatrughn Bhagawan. Impact of processed agro products on export potential of India. J Pharmacogn Phytochem 2019;8(1S):393-396

Reference to Web-resource or Electronic articles.

1. Rajasthan Agriculture Statistics At Glance 2018-19 http://www.agriculture.rajasthan.gov.in/content/dam/agriculture/Agriculture%20Department/agricultural statistics/rajasthan_agriculture_statistics_at_a_glance_2018-19.pdf [Accessed on 30.02.2022]

2. Indiastat: Socio-Economic Statistical Information About India https://www.indiastat.com/table/agriculture/selected-state-season-wise-area-production-product/1207870 [Accessed on 28.02.2022]

.

ABBREVIATIONS

1. **SPSS-** Statistical Package for the Social Sciences
2. **CAGR-**Compound Annual Growth Rate
3. **SD-** Standard Deviation
4. **CV-** Coefficient of Variation