



An Analysis of Growth Performance of Groundnut Crop in India

Dr Prabha Rani

Associate Professor, Department of Mathematics, M.M.H. College, Ghaziabad (UP)
drprabha1962@gmail.com

ABSTRACT

Agriculture contributes about twenty percent of the national income. It provides gainful employment to about two – third of the population of India. Agriculture Sector provide food security for the entire population. Oil seeds / edible oils are next to food grains. The oil seed is one of the cash crops. Groundnut is an important oilseed crop in India which occupies first position in terms of area and second position in terms of production after soyabean. The growth rates, projections and research methodologies are estimated using applied mathematics. In the present paper, an attempt has been made to study the production trend and growth rate by using three years moving average for area sown, productivity and production for Groundnut. State-wise analysis has also been carried out for Groundnut producing States and it is concluded that government may take appropriate measures to provide necessary infra-structure and technology, as these states have suitable Agro-climate condition for the oilseeds. The future projection for production and productivity have also been worked out.

Keywords: Oilseeds, Groundnut, Growth Rate, Production, Productivity

Introduction

Agriculture is backbone of the Indian Economy. Agriculture sector provides food security for the entire population and provide raw material to many Agro industries. Oil seeds / edible oils are next to food grains. India is one of the largest producers of oilseeds in the world and occupies an important position in the Indian agricultural economy. It is estimated that nine oilseeds namely groundnut, rapeseed-mustard, soybean, sunflower, safflower, sesame, Niger, castor and linseed, accounted for an area of 27.14 M ha with the production of 33.22 M tones in 2019-20. Groundnut is called as the 'King' of oilseeds. It is one of the most important food and cash crops of our country.

Methodology

The present study is based on secondary data for the 60 years period from 1960 to 2020. The study examines growth rates of area, production and productivity of Groundnut in India and as well as major Groundnut growing states. In order to examine the degree of relationship in area, production and productivity of Groundnut crop, the statistical measures, such as moving average, mean, percentage, estimation of growth rate have been worked out. The following formulae were used:

Projection

Least Square Technique has been applied for the following linear model:

$$Y = a + b X$$

Where Y is Groundnut production

a is constant

b is regression of Y on X,

X is year (X=1 for 1995-96

=2 for 2000-01 & so on)

Three Year Moving Average

$$Y_{t+1} = \frac{Y_t + Y_{t+1} + Y_{t+2}}{3}$$

Where Y_t is variable (area sown, production or productivity) and t is period, say, $t = 0, 1, 2, \dots$

Growth Rate

The moving averages have been used to estimate growth rates.

$$R_t = \frac{Y_t - Y_0}{Y_0} * 100$$

Where R_t is the simple growth rate during two periods

Findings and Discussions

Out of the nine-oilseed crops grown in India, Groundnut accounts for about 45 percent of the total cropped area under oilseeds and 55 percent of the total area under oilseeds production. Groundnut is an important oilseed crop in India which occupies first position in terms of area and second position in terms of production after soyabean. China ranks first in groundnut production followed by India. Table -1 presents the major Groundnut producing countries in the world (2019). It is seen, that China is the highest producing country with 35.37% share. China, India, Nigeria, Sudan and United States produce together more than 68 % of world's total Groundnut globally. India's contribution is 13.56%. The highest productivity has been observed of the order of 4409 kg per ha in USA followed by China (3781 Kg per ha), Argentina (3455 Kg per ha) and Indonesia (2304 Kg per ha) and lowest 903 Kg per ha in Sudan. However, in India the productivity is 1422 Kg per ha against 1662 kg per ha globally.

Table 1: Major Groundnut Producing countries in the World

Country	Production M Tones	Production %age	Cumulative Production %age	Area Sown M ha	%age share	Cumulative % Share	Productivity Kg per ha
China	17.52	35.37	35.37	4.63	15.53	15.53	3781
India	6.72	13.56	48.93	4.73	15.86	31.39	1422
Nigeria	4.46	9.00	57.93	3.88	13.01	44.40	1150
Sudan	2.83	5.71	63.65	3.13	10.50	54.90	903
USA	2.48	5.01	68.65	0.56	1.88	56.77	4409
Myanmar	1.62	3.27	71.92	1.11	3.72	60.50	1457
Senegal	1.42	2.87	74.79	1.11	3.72	64.22	1279
Argentina	1.34	2.70	77.49	0.39	1.31	65.53	3455
Indonesia	1.18	2.38	79.87	0.51	1.71	67.24	2304
Guinea	0.96	1.94	81.81	0.91	3.05	70.29	1050
Others	9.01	18.19	100.00	8.86	29.71	100.00	
Global	49.54	100.00		29.82	100.00		1662

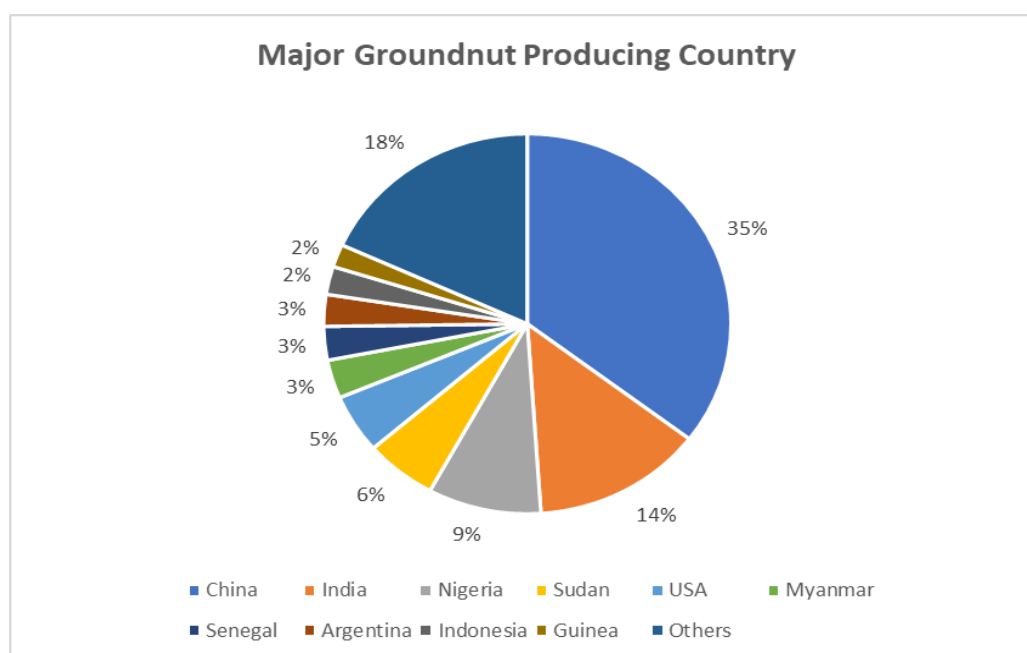
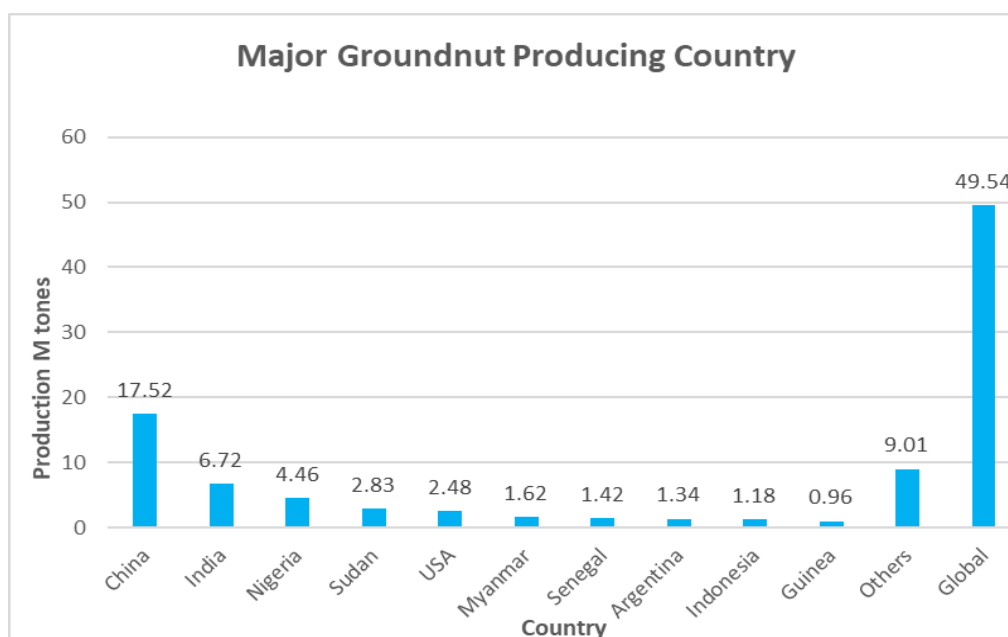


Table -2 Three years moving average of area, production and Productivity of the Groundnut

Year.	Area Sown M ha	Growth rate per annum	Production M Tones	Growth rate per annum	Productivity Kg per ha	Growth rate per annum
1959-60	6.38		4.85		760	
1969-70	7.18	1.25	5.29	0.91	736	-0.32
1979-80	7.13	-0.07	5.66	0.70	792	0.76
1989-90	8.52	1.95	8.42	4.88	989	2.49
1999-2000	6.94	-1.85	6.88	-1.83	985	-0.04
2009-10	5.83	-1.60	6.95	0.10	1188	2.06
2019-20	5.22	-1.05	8.96	2.89	1720	4.48

Table-2 presents the three yearly moving averages of area sown and production for Groundnut. Growth rates have also been estimated. It is seen that area sown has increased from 6.38 M ha in 1959-60 to 8.522 M ha during 1989-90 and declined to 5.22 M ha in 2019-20. The production has also

increased from 4.85 M tones in 1959-60 to 8.42 M tones in 1989-90 and declined to 6.95 M tones in 2009-10 and again increased to 8.96 M tones in 2019-20. The productivity has positive trend. It has constantly increased to 1720 kg per ha in 2019-20 from 736 kg per ha in 1969-70. This table also shows annual growth rates during different periods. The highest growth rate was observed in area sown (1.95%) and in production (4.88%) during 1979-80 to 1989-90.

Table –3 Area, Production and Productivity of Groundnut for Major States (2019-20)

	Area Sown M ha	%age of Total Area	Production M Tones	%age of Total Production	Productivity Kg per ha.
Gujarat	1.69	34.99	4.65	46.73	2751
Rajasthan	0.74	15.32	1.62	16.28	2191
Tamil Nadu	0.35	7.25	1.03	10.35	2980
Andhra Pradesh	0.66	13.66	0.85	8.54	1284
Karnataka	0.5	10.35	0.5	5.03	998
Madhya Pradesh	0.22	4.55	0.35	3.52	1587
Maharashtra	0.29	6.00	0.31	3.12	1063
Others	0.37	7.66	0.64	6.43	1719
All India	4.83	100.00	9.95	100.00	2063

The state-wise break up of area sown, production and productivity of groundnut is presented in table – 3. It is seen that Gujarat is the highest Groundnut producing state (46.73%) of the total Groundnut in the country. Gujarat along with Rajasthan (16.28 %) and Tamil Nadu (10.35%) produce about 73% production in the country. The highest productivity has been observed of the order of 2980 kg per ha in Tamil Nadu followed by Gujarat (2751 Kg per ha) and Rajasthan (2191 Kg per ha) and lowest 998 Kg per ha in Karnataka.

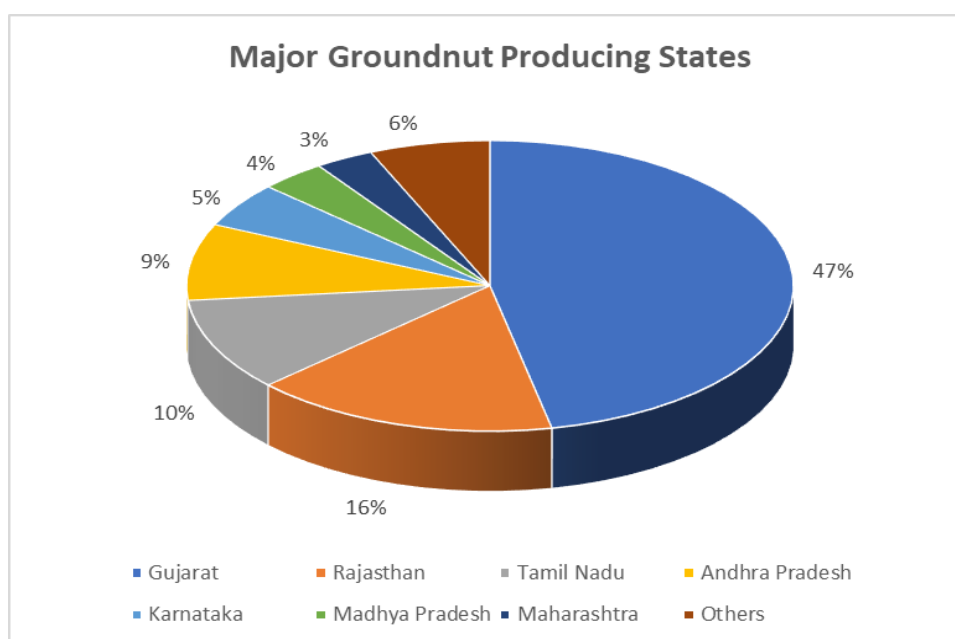


Table -4 presents the projected area, production and productivity for Groundnut for 2025-26 and 2030-31. It is seen that the production has been estimated of the order of 9.30 M Tones and 9.71 M Tones in 2025-26 and 2030-31 respectively. The area will be 4.84 M ha in 2025-26 and 4.44 M ha in 2030-31. The productivity will be 1790 Kg per ha in 2025-26 and 1934 Kg per ha 2030-31.

Table –4 Projected Production, Area and Productivity for Groundnut

	2025-26	2030-31
Area M Ha	4.84	4.44
Production M Tones	9.30	9.71
Productivity Kg per ha	1790	1934

Conclusion

There have been recent improvements in the performance of the productivity though it is still low when compared internationally. Secondly, non-remunerative prices and inadequate profitability inhibits the farmers from shifting groundnut cultivation from marginal to improved lands. Thirdly, low investment in technology, susceptibility to pests and diseases and poor availability of good quality seed and storage is also a major hurdle. To break the productivity, plateau the investment in technology up gradation and mechanization in groundnut production, opening of better market avenues and improving the efficiency in the processing sector shall go a long way in augmenting the overall production and productivity, better cropping may also be advocated. Improving extension activities with adequate focus on post-harvest management, pest and disease control by incorporating scientific methods can also help elevate the crop production and yield. Promoting cultivation in the specific zones having suitable agro-climatic-soil conditions with increased investment and better farming practices will no doubt produce some long-lasting results.

References

Agricultural Statistics at a Glance (2021), Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare, Directorate of Economics & Statistics, Govt of India.

Annual Reports (2020-21), Ministry of Agriculture & Farmers Welfare, Department of Agriculture, Cooperation & Farmers Welfare, Govt of India

Annual Report (2021)-ICAR-Directorate of Groundnut Research, Ivnagar Road, Post Box No. 5, Junagadh-362 001, Gujarat, India
Department of Agriculture, Cooperation & Farmers Welfare website, <https://agricoop.nic.in>

ICAR- Directorate of Groundnut Research website <https://www.dgr.org.in/>

Agrawal P C & Kishore Kumar (2005) – “Technology & Environment impact on agricultural production”- International conference on environment and development – Challenges & Opportunities. Delhi University, Delhi

Uma Kapila (1982) - “Oilseed economy of India – A Case study of Groundnut”. Institute of Economic Growth, New Delhi, Agricole publishing academy Panchsheel Enclave, New Delhi.

S. C. Gupta, V. K. Kapoor - Fundamentals of Mathematical Statistics, Seventh Revised Edition, Sultan

Statistical Methods. Ed. S. P. Gupta, Sultan Chand & Sons Publishing Co. (PI Ltd., New Delhi. (1997)

P C Agrawal & Kishore Kumar, (2009) “Application of ICT in Managing Agricultural Productivity and Food Security in India”, Journal of IPEM (Institute of Professional Excellence & Management), Vol 3 Issue No.1, Jan-June, 2009 pp 28-31

Prabha Rani, P C Agrawal & Kishore Kumar (2010)- “Strategic role of Information Technology for Rural Prosperity in India”, Journal of IPEM, Vol15 4, Issue No. 1, Jan – June 2010 pp 1-6

Groundnut Outlook – January 2022, Agricultural Market Intelligence Centre, PJTSAU

B. Madhusudhana (2013) A Survey on Area, Production and Productivity of Groundnut Crop in India, IOSR Journal of Economics and Finance (IOSR-JEF), Volume 1, Issue 3 (Sep. – Oct. 2013), PP 01-07