

Growth Performance of Pulses in Tamil Nadu

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ABSTRACT

India is producing 23.95 million tons of pulses from an area of 28.83 million hectare, and is one of the largest pulses producing countries in the world. However, about 2-3 million tons of pulses are imported annually to meet the domestic consumption requirement. Thus, there is need to increase production and productivity of pulses in the country by more intensive interventions. A majority of Indian population (40%) is vegetarian and pulse play an important role in providing protein (22%) and other essential nutrients to the large population of the country. However, the area under pulse cultivation is fluctuating from year to year due to number of biotic and abiotic stresses, which are responsible for a large extent to the instability and low yields. To study the growth status of pulses in Tamil Nadu, growth rate in area, production and productivity of selected pulse crops were collected for a period of 45 years from 1970 to 2015. The data can be divided into pre-liberalization period (1970 to 1990), post-liberalization period (1991-2015) and the whole period (1970-2015). In reference to total pulses scenario in Tamil Nadu, it is revealed that the growth in area, production and productivity were positive in all the period except area (-0.37%) in post-liberalization period. It is important to highlight that though the growth rate of area is found negative but the production and productivity were found positive in post-liberalization period. The growth rate in area, production and productivity showed positive in all the period but it is worth noting that the production and productivity found positive and significant in all the period.

Key words: Pulses and Compound growth rate, Fabaceae family

INTRODUCTION

Pulses have been cultivated since time immemorial in rainfed conditions characterized by poor soil fertility and moisture stress environments. These are leguminous plants and belong to the Fabaceae family. Pulses are also an excellent feed and fodder for livestock. Endowed with the unique

ability of biological nitrogen fixation, carbon sequestration, soil amelioration, low water requirement (250 to 300 mm) and capacity to withstand harsh climate, pulses have remained an integral component of sustainable crop production system, especially in the dry areas¹. Pulses are the primary sources of protein (22%) for the poor and the vegetarians (40%).

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The total pulse constitutes red gram, Bengal gram, green gram, black gram, lentil, horse gram, cowpea and field pea. The split grains of these pulses are called dhal and are excellent source of high quality protein, essential amino acids and fatty acids, fibers, minerals and vitamins.

At the global level, pulses are the second most important group of crops after cereals. The global pulses production was 71 million tonnes from an area of 79 million hectare with an average yield of 910 kg per ha during 2015-16². India is the largest producer and consumer of pulses in the world contributing around 25-28 per cent of the total global production. Globally 90 per cent of the red gram, 75 per cent of Bengal gram and 37 per cent of lentil area is contributed by India. Pulses are the basic ingredient in the diets of a vast majority of the Indian population, as they provide a perfect mix of vegetarian protein component of high biological value when supplemented with cereals. The country grows a variety of pulse crops such as Bengal gram, red gram, green gram, black gram, dry peas, lentils, etc. under a wide range of agro-climatic conditions.

MATERIAL AND METHODS

The present study is based on secondary data. The time-series data on area, production and productivity of Pulses in Tamil Nadu were collected from published sources of the Indiastat for the period of 45 years from 1970-71 to 2014-2015) from the official websites Indiastat.com and Seasonal Crop Report. For analytical purpose, this entire period was divided subjectively into two sub periods, viz. Pre-liberalization (1970-71 to 1990-91) and Post-liberalization (1991-92 to 2014-15).

Compound Growth Rate of Pulses was estimated for two periods' viz., Pre-liberalization Period (1970-71 to 1990-91) and Post-liberalization (1991-92 to 2014-15) periods. This grouping was done mainly to find out the effect of liberalization and to compare the export performance of the Pulses. The growth in area, production, productivity, quantity exported, export value and unit value realized from exports were estimated by using the exponential growth function of the form

$$Y = a b^t \cdot e_t \dots\dots\dots (1)$$

Where, Y = Dependent variable, t = Time variable, e_t = Error term, a and b are unknown constants to be estimated. The unknown constants a and b were found by applying methods of least squares by transforming the equation into logarithmic form

$$\ln Y = \ln a + t \ln b \dots\dots\dots (2)$$

Where, log Y is natural logarithm of Y, log a and log b are similarly defined. The compound growth rate 'r' was computed by using the relationship

$$r = (\text{Antilog of } (\ln b) - 1) \times 100 \dots\dots\dots (3)$$

$$\Sigma (t \ln Y) - (\Sigma t \Sigma \ln Y) / n$$

$$\text{where, } \ln b = \Sigma t^2 - (\Sigma t)^2 / n$$

and n is number of time points.

RESULTS AND DISCUSSION

Growth Analysis of Area, Production and Productivity of Pulses in Tamil Nadu

The Compound Growth Rates (CGRs) of Pulses crop in Tamil Nadu for the periods 1970-71 to 1990-91 (Pre-liberalization Period), 1991-92 to 2014-15 (Pre-liberalization Period) and 1970-71 to 2014-15 (Overall Period) were estimated and are furnished in Table 1.

Table 1: Compound Growth Rates of Area, Production and Yield of Pulses from India
(Percent per Annum)

Year	Area	Production	Productivity
1970-71 to 1990-91 (Pre-liberalization Period)	3.02**	5.44**	2.34**
1991-92 to 2014-15 (Post-liberalization Period)	-0.37 ^{ns}	0.54 ^{ns}	0.89 ^{ns}
1970-71 to 2014-15 (Overall Period)	0.24 ^{ns}	1.47**	1.23**

*- significant at 1 per cent level, ** - significant at 5 per cent level and ^{ns} - non significant

The growth rates of pulses in terms of area, production and productivity showed variations. During Pre liberalization Period, the compound growth rate for area (3.02 per cent) was positive and significant. The growth rate during post- liberalization period was negative and non significant. It was concluded that the area of the pulse crop was decreased during Post- liberalization period. The pulse production had a high significant growth rate of 5.44 per cent during the Pre- liberalization period as compared with lower growth rate of Post- liberalization period (0.54). Though the area decreased from around 7,96,000 ha to 8,83,000 ha during Post- liberalization period growth rate of production was less. It is mainly due to productivity.

Regarding the productivity of Pulses, Pre- liberalization period had a high significant growth rate (2.34 per cent) as compared with Post- liberalization period (0.89). This was reflected in production growth rate. It was concluded from the above results that the growth rate of pulses in terms of area was high during Pre-liberalization period. Productivity of pulses influences the production and hence technologies have to be developed to increase the pulse productivity. It was average of 443 kgs/ha during the Post-liberalization period.

CONCLUSION

The results of compound growth rate in area, production and productivity of total pulses in Tamil Nadu revealed that the growth in area,

production and productivity were positive in all the periods except area in Post-liberalization period. It is important to note that the area under cultivation of pulses is increasing marginally but not significantly. Pulses have been found to be preferred over coarse grains. Since the yield of pulses is stagnant vis-à-vis other crop. In the light of high population growth, poor production performance has resulted in reduction in per capita availability of pulses. Hence, the efforts need to be made for creation of necessary infrastructure like government assured procurement centre and storage facility and efficient execution of pulses development schemes like National Food Security Mission (NFSM) and Accelerated Pulses Production Programme (A3P) to provide favorable conditions for pulses production

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