researcharticle | International Journal of Commerce and Business Management (October, 2010) Vol. 3 Issue 2 : 172-174

Growth and instability of chickpea production in Vidarbha region of Maharasthra

SONAL GAJBHIYE, R.N. WANKHADE AND S.J. KAKDE

Accepted : May, 2010

ABSTRACT

Chickpea (*Cicer arietinum* L.) commonly known as 'gram' or "Bengal gram' is the most important pulse crop of India. . The present study is an attempt to evaluate the growth and instability of important crop *i.e.* chickpea. For the present study Vidarbha region of Maharashtra state was chosen .The study was base on secondary data pertained to the year 1980-81to 2007-08. The results revealed that the growth rates for area and production of chickpea were found significant. Instability studied in chickpea indicated that productivity under chickpea exhibited less variation. It means that production of chickpea over the period has been almost constant. With this view it is necessary to study the growth and instability of chickpea production in Vidarbha region of Maharashtra.

Key words : Chckpea, Instability of chickpea

Pulses are a wonderful gift of nature as they nourish mankind with highly nutritive food and keep the soil alive and productive. On account of these virtues, pulse crops remain an integral part of the sustainable agriculture production systems of the semi-arid tropics.

Chickpea *(Cicer arietinum)* is one of the most important pulse legumes not only in Vidarbha but also in many parts of the world. India is largest producer and consumer of chickpea in the world, sharing 65 and 70 per cent of the total global area and production, respectively. However, productivity of chickpea in India is quite low.

As legumes are important component of the average diet, they are much in demand but are short in supply due to low productivity and low production. With this view, it is essential to study the growth and instability of chickpea production in Vidharba region of Maharashtra. Objectives of the present study were to study the growth rates of area, production and productivity of chickpea in Vidarbha region of Maharashtra and to study the degree of instability in area, production and productivity of chickpea in Vidarbha region of Maharashtra.

METHODOLOGY

The study covers a 28-year period of study predominantly based on secondary data pertains to the year 1980-81 to 2007-08. Data on area, production and productivity of chickpea were collected from various issues of epitome of agriculture. The entire study was split into two sub periods. The sub period was framed as period I- 1980-81 to 1993-94, period II- 1994-95 to 2007-08, Overall 1980 – 2008. In order to study the instability in area and productivity which are the major sources of production instability, the Coppock's instability index, coefficient of variation was estimated for the study period.

Correspondence to:
SONAL GAJBHIYE, Department of Agricultural Economics, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.) INDIA
Authors' affiliations:
R.N. WANKHADE AND S.J. KAKDE, Department of Agricultural Economics, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, AKOLA (M.S.)

Estimation of growth rates:

The growth rates in area, production and productivity were studied estimating compound growth rates at different periods. Both linear and compound growth rates were estimated. However, finally the compound growth rate was used for the study.

The growth rate was estimated using exponential trend model.

$$Y = a.\ b^t$$

where,

Y = Area / production / productivity
a = Intercept
b = Regression coefficient
t = Time variable

From the estimated function the compound growth rate was worked out by,

$$CGR\ (r) = [Antilog\ (log\ b) - 1] \times 100$$

where,

r = Compound growth rate

The degree of instability in area production and productivity of chickpea in different period was measured using coefficient of variation and coefficient of instability

$$\text{Coefficient of variation (C.V.)} = \frac{6}{X} \times 100$$

where,

$$6 = \text{Standard deviation} = \sqrt{\frac{\Sigma (x - \bar{x})^2}{n}}$$

x = Arithmetic mean

Coefficient of instability was worked out using Coppocks Instability Index

$$V \log = \frac{\left[\Sigma \log \frac{X_{t+1}}{X_t} - m\right]}{N}$$

$$\text{The instability index} = [\text{Antilog} (\sqrt{v} \log) - 1] \times 100$$

where,

X_t = Area / production productivity of crop in year t

N = Number of years minus one

M = Arithmetic mean of the differences between the log of X_t and X_{t-1}, X_{t-2} etc

FINDINGS AND DISCUSSION

The growth performance in agriculture is measured in three ways-area, production and yield. It could be seen from the Table 1 that the overall growth rate of area under chickpea was 5.90 per cent which was found significant. The growth rate of chickpea production as a whole was significant being 8.72 per cent over the period.

Table 1 : Compound growth rates of area, production and productivity of chickpea in Vidarbha

Sr. No.	Particulars	Compound Growth Rates		
		Period	Period II	Overall
1.	Area	6.23***	6.07***	5.90***
2.	Production	11.69***	7.68**	8.72***
3.	Productivity	5.13***	1.51	2.66***

** and *** indicate significance of values at P=0.05 and 0.01, respectively

Productivity is the most significant criterion in measuring the growth of any crop output. The success or failure of any improvement in the art of agriculture is measured by the resultant increase or decrease in the productivity as seen in the Table 1. Chickpea productivity for overall period registered a significant positive growth rate of 2.66 per cent. The productivity of chickpea declined by 1.51 per cent in period II.

In order to examine the extent of instability in area, production and productivity, of chickpea coefficient of variation was worked out. The higher the co-efficient of variation the greater is the instability and *vice versa*.

Table 2 : Coefficient of variation in area, production and productivity of chickpea in Vidarbha

Sr. No.	Particulars	Coefficient of variation		
		Period	Period II	Overall
1.	Area	31.06	45.93	60.72
2.	Production	62.78	67.46	90.35
3.	Productivity	32.46	22.00	30.61

As seen from the Table 2 that the coefficient of variation for chickpea area for overall period was 60.72 per cent. As revealed Vidarbha region witnessed a high instability of production as indicated by high coefficient of variation value of 90.35 per cent for overall period. Results on coefficient of variation of productivity reveal that overall period showed consistent variation as coefficient of variation was 30.61 per cent.

The coefficient of variation measures the absolute variation while coefficient of instability which is also called as instability index measures the variation around the trend.

It could be seen from Table 3 that the instability index of area under chickpea for overall period was 15.80 per cent. For production it was 20.17 per cent for entire period. The study thus indicated that instability in production was on higher side during the study period. This indicates the unstable nature of production of chickpea. The instability index of productivity during overall period was 13.11 per cent. This indicates that the farmers were getting higher yield recently than the previous year.

Table 3 : Coppack's instability index in area, production and productivity of chickpea in Vidarbha

Sr. No.	Particulars	Instability index		
		Period I	Period II	Overall
1.	Area	13.31	12.96	15.80
2.	Production	15.74	14.95	20.17
3.	Productivity	12.39	12.21	13.11

Conclusion:

– Chickpea is an imp pulse crop in Vidarbha region

– The growth rates for area and production of chickpea were found significant.

– Instability studied in chickpea indicated that productivity exhibited less variation. It means that production of chickpea over the period has been almost constant.

– Variability in area, productivity of chickpea during period I was lowest as compaired to period II.

REFERENCES

Alshi, M.R. and Joshi, C.K. (1984). Measurement of agricultural growth in Vidarbha. Agrosco report submitted to the Agricultural Economics and Statistics sub – committee, Department of Agriculture Economics and Statistics, Dr. Panjabrao Deshkukh Krishi Vidyapeeth, Akola, pp. 27-33.

Arya, C.H. and Rawat, M.S. (1989). Growth rate in area, production and productivity of Oilseeds, sugarcane, potato and cotton. *Indian J. Agric. Econ.,* **45** : 441-445.

Bharathi, S. V., Shareeti, S. M. and Raju, N.T. (1992). Instability of pulses production in Andhra Pradesh – An economic analysis. *Argil. Situ. India*: 631- 635.

Prakash, Brahm, Varshney, J.G. and Srivastava, Sushila (1997). Regional Variations in the performance of the pulses. *Indian J. agric. Econ.*, **52** (3): 424-425.

Marawar, S.S., Deshmukh, R.G. and Tingre, A.S. (2003). Growth and diversification of agriculture in Vidarbha – A spatio – temporal analysis. Agrosco Report, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.).

Sadasivanal (1989). Pattern of pulses production. An analysis of growth trends. *Econ. & Political Weekly,* **24** (1) : 167-179.

Shukla, N. D. (1998). Growth and instability in pulses production – An interstate analysis. *Agril Situ. India*: 639—643.

***