J. Farm Sci., 29(4): (524-525) 2016

Growth performance of pulses in Karnataka

Pulses are the important crops in the farm production system as they add nitrogen in the soil and provide food and nutritional security to large number of vegetarian population. In comparison with the growth in production of food gains with the advent of green revolution the growth in production of pulses is rather disappointing and has led to a consequential rise in the prices of pulses.

The growth in production of pulses like any other crops is largely determined by the growth in area under cultivation or an increase in the productivity levels or both. The area and productivity of pulses during last decades have been fluctuating and hence, the production has remained almost stagnant.

Karnataka is one of the important pulses growing state in India and pulses are grown in an area of about 24.32 lakh ha with the production of 15.24 lakh tonnes and the productivity was 626 kgs/ha during 2014-15. (Anon., 2015). The important pulses grown in Karnataka are pigeonpea, chickpea, horsegram, greengram and blackgram. More than 60 per cent of the area under total pulses in Karnataka is covered by pigeonpea and chickpea crops. The major pulse growing districts in Karnataka are Kalaburagi, Vijayapura, Bagalakot, Belagavi, Bidar, Raichur, Dharwad and Mysuru. Hence the present study is confined to these districts. The specific objective of the study was to: estimate the growth in area, production and yield of pigeonpea, chickpea and total pulses.

A present study is conducted in seven districts of northern Karnataka for the crop year 2015-16. The compound growth rates in area, production and yield of pigeonpea, chickpea and total pulses were estimated from the time series data collected for the period between 2000-01 to 2012-13 from the Directorate of Economics and Statistics, Government of Karnataka, Bengaluru. The following analytical tool was used to estimate the growth rates (Nethrayani 2013).

$Y_t = A B^t V_t$ ..... (1)

Where,

Y_t = Area / production / productivity or other variable under consideration in the year t

A = Intercept indicating Y in the base period (t = 0)

B = 1 + g

T = *time period*

V_t = Random disturbance term

Equation (1) was converted into the logarithmic form as follows to make it in a linear form:

$\ln Yt = \ln A + t * \ln B + \ln V_t$

This is of the following form

$Qt = a + bt + U_t$ .....(2)

Where, Qt = $\ln Y$

$A = \ln A$

$b = \ln B$

$Ut = \ln V_t$

The values of 'a' and 'b' were estimated by using Ordinary Least Squares estimation technique. Later, the original 'A' and 'B' parameters in equation (1) were obtained by taking antilogarithms of 'a' and 'b' values as;

A = Antilog (a)

B = Antilog (b)

Average annual compound growth rate (%) was calculated as follows:

$g = (B - 1) * 100$

The compound growth rate of area, production and yield of pigeonpea, chickpea and total pulses in major selected pulse growing districts as well as for the state of Karnataka as a whole along with the factors responsible are discussed. Pigeonpea is one of the major pulse crop in the state. This crop covers about 25 per cent of the total area of pulses. The compound growth rate of area, production and productivity of pigeonpea in major selected pulse growing districts as well as for the state of Karnataka as a whole is presented in Table 1. It can be seen from the table that a positive and significant growth rate was observed in area, production and yield in most of the districts and state as whole. Except in Belagavi and Dharwad districts in all other districts the growth rate in area was positive indicating that the popularity of this crop coupled with increase in the area under cultivation of this crop due to implementation of National Food Security Mission (NFSM) in the study areas. The growth rate was found negative and significant in the production of pigeonpea only in Bellary district. This might be due to diversification from pigeonpea to some other field crops and other vegetables. On the contrary, the growth rate was positive in the production of pigeonpea in all other districts.

Table 1. District wise compound annual growth rates of area, production and yield of pigeonpea in Karnataka

Districts	Compound annual growth rate (CAGR) (Per cent per annum)		
	Area	Production	Yield
Bagalakot	4.21**	2.80**	-0.64**
Belagavi	-3.61**	1.96**	6.49***
Bellary	0.55**	-0.02**	0.37**
Bidar	0.64**	7.91	7.84
Dharwad	-0.65**	8.73**	10.16**
Kalaburagi	0.53**	4.45**	2.74**
Raichur	4.43***	9.59***	5.63**
Vijayapura	19.56	22.16	2.66**
Karnataka	3.30	6.90	4.09***

Note: *** Significant at 1% level of probability
** Significant at 5% level of probability

This was mainly due to more farmers replacing other crops by pigeonpea because of more popularization of pigeonpea variety like TS-3R in recent year in the study area coupled with increase in price of pulses over the years contributing to grab the attention of the farmers towards cultivation of pigeonpea. All the districts except Bagalkot district showed a positive growth rate in yield. This was mainly because of use of improved varieties and better cultivation practices under good management conditions as advised by the NFSM Scheme Officials during training programme.

Chickpea is another important pulse crop growing mainly during Rabi season under rainfed conditions. The growth rate analysis of area, production and yield of chickpea in major pulse growing study districts and state as a whole is presented in Table 2. It could be seen from the table that the growth rate was positive in area, production and productivity of chickpea in all the study districts and state as a whole. This might be due to increase in area under chickpea cultivation coupled with popularity of recently released improved varieties like JG-11, GBM-2 etc which are found suitable for mechanical harvesting in view of non-availability of labours during peak period and also congenial climatic conditions suitable for growing of chickpea in the study area. Similar findings were reported by Nethrayani (2013) who studied the growth in chick crop.

Table 2. District wise compound annual growth rates of area, production and yield of chickpea in Karnataka

Districts	Compound annual growth rate (CAGR) (Per cent per annum)		
	Area	Production	Yield
Bagalakot	5.95**	14.93	0.99
Belagavi	4.56***	8.17	4.04**
Bidar	0.12**	0.60**	1.02**
Dharwad	5.15	13.70***	8.54**
Kalaburagi	3.61***	3.36**	0.31**
Gadag	7.69	15.91	6.24**
Raichur	14.82	15.78	1.35**
Vijayapura	13.54	14.08	1.03**
Karnataka	8.35	8.90	1.08**

Note: *** Significant at 1% level of probability
** Significant at 5% level of probability

Table 3. District wise compound annual growth rates of area, production and yield of total pulses in Karnataka

Districts	Compound annual growth rate (CAGR) (Per cent per annum)		
	Area	Production	Yield
Belagavi	0.08**	4.90**	4.39***
Bidar	-2.11	2.74**	4.19
Vijayapura	10.89	13.01	0.72**
Dharwad	1.19**	8.79**	7.75**
Gadag	3.65**	7.87**	4.69**
Kalaburagi	-0.38**	2.59**	1.87**
Mysuru	1.14**	1.03**	0.21**
Raichur	10.04	13.29	0.97**
Karnataka	2.10	5.23	3.05***

Note: *** Significant at 1% level of probability
** Significant at 5% level of probability

The compound annual growth rate of area, production and productivity of total pulses in major pulse growing study districts and state as a whole is presented in table 3. It could be observed from the table that the increase in the area under total pulses cultivation in all other study districts except Bidar and Kalaburagi. A negative growth rate in area under total pulses production was observed in Bidar and Kalaburagi districts. This may due to diversification from pulses area to some other field crops and other vegetable crops.

A positive growth rate was observed in production and yield of total pulses in all the study districts and the state as a whole. This may be because of increase in area under pulse crops coupled with popularity of these crops and rise in price of pulses and more farmers showing interest in cultivation of these pulse crops in the study area. The similar findings were reported by Saraswati *et al.* (2012), Raghuwanshi *et al.* (2001), Srivastava *et al.* (2013).

SIDDESHWAR S. SHIRAGANVI
S. S. GULEDAGUDDA

Department of Agricultural Economics
College of Agriculture, Vijayapur
University of Agricultural Sciences
Dharwad – 580005, Karnataka, India
E-mail: siddeshwarss76@gmail.com

(Received: July, 2016 ; Accepted: December, 2016)

References

Anonymous, 2015, Economic survey of Karnataka, GOK, Bengaluru.

Nethrayani, K. R., 2013, Impact assessment of Technology Mission on Oilseeds and Pulses. *Ph.D. Thesis,* Univ. Agric. Sci., Dharwad, Karnataka (India).

Raghuwanshi, R. S., Sharma, N. P. and Sharma, S. N., 2001, Growth of chickpea in Bundelkhand region of Madhya Pradesh*, Agric. Sci. Digest,* 21: 4.

Saraswati, P. A., Basavaraja, H., Kunnal. L. B., Mahajanashetti, S. B. and Bhat, A. R. S, 2012, Growth in area, production and productivity of major crops in Karnataka*, Karnataka. J. Agric. Sci.,* 25(4): 431-436.

Srivastava, S. C., Singh, B. K., Sudeep S. Tomar and Yadava, H. S., 2013, Growth pattern of major pulses in eastern Utttar Pradesh*. Intl. J. Farm. Sci.,* 3(2): 1-9.

www. karnatakagristat.com