Growth Performance of Major Crops in Gujarat State

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Abstract

Gujarat has achieved a remarkable growthin its agricultural sector, which not only has made it self-sufficient in foodgrains production but also has elevated it to thelargest contributor in spices and oilseeds to India's central pool of food grains and oilseeds. The study has examined the growth performance of major crops in the Gujarat state . The present study was undertaken with the following specific objectives Compute Overeall Gujarat compound growth rates and instability indices of area, production and productivity of major Crops crops in Gujarat. Methodology for growth performance compound growth rates and for instability coefficient of variability was carried out.Key findings of the study has revealed that the growth performance of major crops was significant in area ,production and yield. Thegrowth performance of among major crops was found to be highest in cumin, followed by the castor. The highest rate of increase in area and production of cumin was observed in Gujarat, whereas the highest yield of sugarcane was noticed in Gujarat. The values of instability indices for area (0.85), production (27.32) in pearl millet and yield (11.93) were comparatively lower in fennel, indicating theirstability in the state. Implications of study is the growth rates in the area of most of the crops declined mainly because of stagnation or decline in area. So, there is special need to improve productivity of all the crops in general and food grain crops in particular. The credit investment, public investment and rural infrastructure spending should be promoted in rural areas to enhance the growth rates.

Key words: *Growth performance ,Compound growth rate, instability index, major crops, Gujarat.*

Introduction

Gujarat is the state which has medium amount of fertile land , in India. It is doing well in industrial as well as agricultural sectors. About 60% of the population is engaged in agriculture, directly or indirectly. Gujarat has achieved a remarkable growth in its agricultural sector, which not only has made it self-sufficient in foodgrains production but also has elevated it to the largest contributor in spices and oilseeds to India's central pool of foodgrains and oilseeds. On the question the relationship between growth and instability. The state of Gujarath as a variety of soils, rainfall pattern, temperature regimes,

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and irrigation facilities. This diverse agro-climatic situation across the stateholds potential for development of the horticulture sector in a bigway .However, the wide annual variations in rainfall affects the productivity of crops.

The investment in foodgrains, fruit and oilseed and spices processing units has increased in the state which shows a bright future for horticulture and processing sector in Gujarat. Considering the importance of foodgrains ,horticulture ,oilseed and spices sector in the Gujarat state,the present study was undertaken with the following specific objectives:

- Compute Overeall Gujarat compound growth rates and instability indices of area, production and productivity of major Crops in Gujarat.

Data and Methodology

The overall state timeseries data on area ,production and yield of major vegetable crops of the state were collected from the Directorate of Agriculture, Government of Gujarat, Gandhinagar,for the period 1982-83 to 2017-18. The overall state compound growth rates (CGRs) of area,production and productivity of major vegetable crops were computed using the following formula:

CGR(%)=(Antilogoflog b–1)×100

where,b is the regression coefficient

The level of instability was computed with the help of following formula. This formula was referred from Text book of agriculture Statistics, Rangaswami (2016).:

InstabilityIndex(CV)=$\frac{\sigma}{X} * 100$

Results and Discussion

Compound growth rate of major crops in Gujarat

The results of overall Gujarat compound growth rates of area, production and yield of major crops are presented and discussed inTable1.

Table 1: Compound growth rate of major crops in Gujarat (1982-83 to 2017-18)

Crop	Area	Production	Productivity
Paddy	1.57** (0.0023)	3.77** (0.0031)	2.17** (0.0021)
Pearl millet	-2.92** (0.0029)	0.084 (0.163)	3.10** (0.0032)
Maize	1.21** (0.0022)	2.72** (0.0025)	1.49** (0.0021)
Wheat	2.99** (0.0032)	4.29** (0.0037)	1.25** (0.0023)
Gram	2.57** (0.0024)	4.32** (0.0039)	1.70** (0.0025)
Black gram	0.14 (0.168)	2.13** (0.0021)	1.55** (0.0022)
Green gram	0.77	2.45**	1.66**

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	(0.178)	(0.0027)	(0.0027)
Groundnut	-0.37* (0.0053)	3.55** (0.0029)	3.95** (0.0037)
Castor	4.07** (0.0038)	5.83** (0.0031)	1.77** (0.0021)
Cotton	2.99** (0.0029)	7.01** (0.0039)	3.92** (0.0035)
Sugarcane	2.44** (0.0021)	6.80** (0.0036)	4.24** (0.0039)
Cumin	5.80** (0.0030)	7.15** (0.0041)	1.27** (0.0020)
Fennel	3.76** (0.0026)	3.92** (0.0033)	0.74* (0.0058)

It is observed from Table 1 that most of the major crops in Gujarat showed significant growth in area, production and productivity. While considering growth in area of major crops cultivated in Gujarat pearl millet and groundnut recorded significant negative growth over the period of 1982-83. However the crops paddy, maize, wheat, gram, castor, cotton, sugarcane, cumin and fennel recorded significant positive growth over the base year 1982-83. Growth in area is observed to be maximum in case of cumin while least significant growth is observed under groundnut crop.

While considering growth in production of major crops cultivated in Gujarat most major crops excluding pearl millet showed significant positive growth over the base year 1982-83. Growth in production is observed to be maximum in case of cumin while least significant growth is observed under black gram crop.

While considering growth in productivity of major crops cultivated in Gujarat all major crops excluding green gra showed significant positive growth over the base year 1982-83. Growth in productivity is observed to be maximum in case of sugarcane while least significant growth is observed under fennel crop. Similar results were obtained by Rao (1989).

I. Variability in area, production and productivity of major crops in Gujarat

Table 2: Variability in area, production and productivity of major crops in Gujarat

(Per cent)

Crop	Period 1982-83 to 2017-18		
	Area	**Production**	**Productivity**
Paddy	18.66	42.50	26.61
Pearl millet	0.85	27.32	39.66
Maize	16.01	40.14	31.48
Wheat	43.71	58.77	16.17
Gram	46.79	69.96	27.52
Black gram	25.66	39.88	25.43
Green gram	24.67	46.90	39.28

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Groundnut	14.65	57.58	58.12
Castor	51.80	59.62	22.49
Cotton	34.65	76.20	129.37
Sugarcane	27.96	144.20	133.58
Cumin	59.53	83.73	25.40
Fennel	51.93	56.55	11.93

It is revealed from Table 2.that during study period 1982-83 to 2017-18 in Gujarat, the maximum variability is showed in area under cumin crop, 59.53 per cent, however maximum variability in production and productivity is under sugarcane crop *i.e.* 144.20 and 133.58 per cent, respectively. The maximum variability in area under cumin is observed mainly because area under cumin crop increased as compared to base year and favourable climate condition, while the maximum variability in production and productivity under sugarcane crop were recorded mainly because area under sugarcane crop declined as compared to base year, adverse climate condition and over maturity condition at time of harvesting that results in weight loss.

However, least variability in case of area and production were showed under pearl millet *i.e.* 0.85 and 27.32 per cent, respectively while considering the productivity least variability is recorded under fennel crop *i.e.* 11.93 per cent. The reason for least variability in area and production of pearl millet is due to good weather, suitable soil type and use of improved seed and technology like IPM, INM, while in fennel the least variability in productivity is mainly because of favorable climatic condition, use improved seed, use of IPM & INM and soil type. The results were similar to Narwade(2014).

Conclusions

The growth rates of area of mostly major crops is positive during entire study period except crops *viz.,* crops groundnut in overall Gujarat. The growth rates of production of mostly major crops is positive during entire study period except crops *viz.,* pearl millet in overall Gujarat.The growth rates of productivity of mostly major crops is positive during entire study period except crops *viz.,* crops green gram in overall Gujarat.

The variability in area, production and productivity is observed to be least in case of pearl millet maize and groundnut crops while, wheat, gram, black gram, sugarcane and cotton indicated medium variability and the highest variability is recorded by castor, cumin and fennel.Thus, the hypothesis stating that the

variation in area and productivity has been answerable for variability of production over the time period of the state has been recognized.

Implications : The study is the growth rates in the area of most of the crops declined mainly because of stagnation or decline in area. So, there is special need to improve productivity of all the crops in general and food grain crops in particular. The credit investment, public investment and rural infrastructure spending should be promoted in rural areas to enhance the growth rates.

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