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An analysis on changing trends of foodgrains in Himachal Pradesh

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Abstract
The present study deals with the growth trends in area, production and productivity of food grains in Himachal Pradesh. In the process of development changes are occurring in these factors. The study presents negative trends towards area under all the food grains over the year. Production of all food grains has registered positive trend except barley and gram crops. To know about the trends in area, production and productivity of food grains, percentage method was utilized as a statistical measure.

Key-Words: Himachal Pradesh, food grains, economics, changing growth trends

Introduction
Since long agriculture remains the main occupation of the people of Himachal Pradesh. It provides direct employment to about 71% of the total working population. Agriculture is beset with the disadvantage of small holdings. Only 65% of the total reported area is available for cultivation. Out of this area, net area sown and current fallows account for only 21% (Economics and Statistics Department Himachal Pradesh). There is barely any possibility of mechanized and technologically sound farming due to predominance of small holdings, scanty irrigation and terraced fields. Despite all these difficulties, the farmers of Himachal Pradesh are persistently trying to exploit the agricultural potential of the state to increase food production and also to supplement the income by producing commercial crops.

The economy of Himachal Pradesh has shown a shift from agriculture sector to industries and services as the percentage contribution of agriculture and allied activities in State Domestic Product has decreased from 58% in 1950-51 to 23% in 2004-05. The declining share of agriculture sector, however, did not affect the importance of this sector in the state economy. The growth of the economy has fundamentally been determined by the trend of agricultural production as it has considerable share in the State Domestic Product and has overall impact on other sectors via input linkages, employment and income.

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Due to lack of irrigation facilities, agricultural production largely depends upon timely rainfall and weather conditions of the state. With in agriculture, food grains production is by far the major activity and providing the main staple source of food in the state. Food grains provide almost all the calories and proteins consumed by the poor and give the rural people with the bulk of their employment. So the growth of agriculture sector depends on production and productivity of food grains. Oberoi and Raina[6] found that among the food grains paddy, maize and wheat play a dominant role and occupy as much as 85% of the total area under cultivation. A study by Kumar et al [7] revealed that area under food grains has contracted during nineties. Therefore, keeping in view the importance of food grains in the agrarian economy of the state, it is desirable to analyze whether there has been any considerable change in the area, production and productivity of food grains or not. Former President of India also called upon the agriculture scientists to enable Himachal Pradesh farmers to achieve self sufficiency in food grains production during his visit to Chaudhary Sarvan Kumar Himachal Pradesh Agricultural University, Palampur. Oberoi and Raina[6] concluded that area under total food grains in Himachal Pradesh had increased at the rate of 0.5219 % per annum. Their study had covered the period 1975-76 to 1986-87. According to them the area under wheat and maize was increased whereas area under paddy and pulses decreased significantly over the study period. However, there had been a significant decline in case of pulses. The instability was found to be highest in the production of pulses. Moorti et al [8]

examined the trends in the production of pulses and oil seeds in Himachal Pradesh. According to them area, production and productivity of all pulses show significant negative trends of 3.69, 10.31 and 6.87 per cent per annum respectively over the study period (1970-71 to 1987-88). There has been marginal non-significant increase in the area under other pulses which included lentil, green gram, red gram and beans etc. Mitra and Jena[9] studied the area, production and yield per hectare of groundnut crop. They calculated compound growth rates in relation to area, yield and production. They found in their study that only extension of the area under groundnut cultivation will not solve the problem of increasing the production but adequate attention has to be paid to increase the productivity of the crop.

Bhatnagar[10] investigated the trends and pattern of growth in area, production and yield of sunflower in Haryana. He used secondary data of 11 years 1991-92 to 2001-02 and analysed the time series data with the help of linear function. He found that area and production of sunflower in Haryana had been reduced. According to his study area of sunflower has wide variation of 62.29%, whereas the area of oilseed in Haryana has a very slow variation of 14.27%. Similarly, the production of sunflower has a shown a variation of 64.52% and on the other hand oil seed production has a variation of 21.01%. He concluded that the variation in yield has been obtained 12.95% and 17.65% for sunflower and oilseed respectively in Haryana. Sunflower has maximum variability in the area and production. Kumar et al[11] studied growth trends of area and production of pigeon pea in India. They utilized the time series data (1949-50 to 2001-02) on area, production and yield of pigeon pea. The growth trends of area and production were expressed by the functional form $y=a+b^t$. According to study the growth in pigeon pea both in area and production has shown increasing trend in the country. Their study also shows that the best trend in area and production is quadratic in nature. The significantly positive square turn in the quadratic equation indicates acceleration in pigeon pea area and production in the country during the study period. Kumar et al [12] examined the time series data for lentil (1970-71 to 2006-07) to assess production status, growth patterns and growth trends of area and yield along with their interaction. During overall period, the country has shown growth in area (0.934%) and production (3.32%). The results reveal that co-efficient for area in the country varies from 7% to 13%. During the study period, the change in the total production of lentil was completely due to the change in area under the crop as the yield and interaction effects were very small. Kumar et al[7] made a case study of district Solan of Himachal Pradesh regarding land use and cropping pattern. In their findings they revealed that, there were some important variations under area in case of permanent pasture and net sown area. Other land categories had not shown significant change under their area. The study on the cropping pattern in district over the study period suggest that among food crops area under wheat and paddy had increased whereas, in case of barley and maize it had declined considerably. Area under non food crops had shown increased trend for cash crops. They also observed that total cropped, net sown area, and area sown more than once decreased over the study period. The present study is intended to examine the variation rates of area, production and productivity of different food grains and to estimate the instable production rate.

Methodology

The present study is based on secondary data which were collected from different issues of Statistical Outline of Himachal Pradesh published by the Economics and Statistics Department of Himachal Pradesh. The study covers the period 1988-89 to 2004-05. To estimate the variation rates of different crops simple tabular and percentage method were used. The computation of % change in area, % change in production, % change in productivity was obtained by using the formula as per equation 1, 2 and 3.

$$\% \text{ change in Area} = \frac{\text{Area in (3) - Area in (1)}}{\text{Area in (1)}} \times 100$$

$$\% \text{ change in Production} = \frac{\text{Production in (3) - Production in (1)}}{\text{Production in (1)}} \times 100$$

$$\% \text{ change in Productivity} = \frac{\text{Productivity in (3) - Productivity in (1)}}{\text{Productivity in (1)}} \times 100$$

Results and Discussion

Trends in the area, production and productivity of foodgrains

Table 1 presents the % of area, production as well as productivity for different food grains in Himachal Pradesh. Picture about the area under food grains in Himachal Pradesh is gloomy. In the year 1988-89 area under food grains was 89.79% and in 2004-05 it was 85.25%. Area under all the food grains crops has decreased over the study period. At the same time area under vegetables has increased from 35191 hectares in 2000-01 and 61021 hectares in 2004-05. Therefore, it is understandable that cropping pattern of Himachal Pradesh is shifting towards commercial crops.

It is clear from the table that during study period area of gram decreased 77.58% which was main pulse crop of Rabi season. The significant decline in the area of rice, barley, millets, ragi, and other pulses is 16.13%, 19.58%, 55.27%, 40.67%, and 26.31% respectively over the study period. Minor decrease of 5.2% in case of maize and negligible decline of 0.91 in case of wheat is observed. Also decline in total area under food grains and total cropped area 7.8% and 2.89 is registered in this study. This may be because of the problem of wild animal menace as well as diversion of area towards vegetable crops in this hilly state.

Like decrease in area production of gram also declined 138.48%, which demonstrate that in this state the crop has almost embossed out. Barley has too registered decrease of 4.20% in this study. All other food grains have recorded positive changes in their production as clear from the table 1. Production of total food grains has witnessed 30.88% increase during the study period 1988-89 to 2004-05. Productivity plays an important role in the production of food grains as compare to area under food grains. If the productivity of certain crop is high as compare to previous years and area decline the production will remain high. Positive picture of the state in this respect show that was decline in their area. Due to that production of food grains has increased in this small hilly state. Productivity of total food grains increased 42.96% in 2004-05 compare to 1988-89.

It is due to change in the area under high yielding varieties and increase in the consumption of fertilizers in Himachal Pradesh as shown in Table 2 and 3 respectively.

In order to increase the production of food grains, stress has been given to distribution of HYV seeds to the farmers in the state. Table 2 presents significant increase in area under HYV crop for maize. It was increased from 30.46% in 1988-89 to 81.29% in 2004-05 and production of maize increased by 31.65% over the years. There is also increase in the area under HYV crop for wheat and production increased by 33.95% during the study period. Although, area under HYV seed for crop paddy remains more or less same over the study period. Table 3 depicts that consumption of fertilizers has been increasing over the study period in the state. Fertilizer is a single input, which helps in raising the production to a great extent. Fertilizers consumption is also increasing due to adoption of commercial crops like, off season vegetables, potato, ginger etc. by the farmers of the state. The agro-climatic conditions in the state are favorable for growing these cash crops, Therefore, farmers moving towards these economically more profitable options.

The present study on the trends regarding area, production and productivity of food grains in Himachal Pradesh revealed a negative trend in case of area and positive in case of productivity. Production of food grains show mix trends over the study period. Area under HYV crop all the major food grains i.e. wheat, maize and paddy has shown increasing trend. Consumption of fertilizers has increasing during the study period. Decrease in area under food grains has shifted towards the cash crops. The cultivation of other crops must be carried out at regular trend, but not on the cost of food grains.

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Table 1: Area, production and productivity of foodgrains in Himachal Pradehsh, 1988-89 to 2004-05

Crop		1988-89 (1)	1996-97 (2)	2004-05 (3)	% change in(3)as compare to (1)
Wheat	A	373.2 (42.32)	373.0 (44.36)	369.8 (45.48)	- 0.91
	P	513.2 (45.15)	561.9 (42.36)	687.45 (46.23)	33.95
	Y	1.37	1.5	1.86	35.76
Maize	A	315.1 (35.73)	307.3 (36.55)	298.6 (36.74)	-5.2
	P	483.3 (42.53)	589.4 (44.43)	636.29 (42.78)	31.65
	Y	1.53	1.91	2.13	39.21
Rice	A	94.8 (10.76)	81.7 (9.72)	79.5 (9.78)	-16.13
	P	89.8 (7.90)	108.9 (8.23)	109.13 (7.34)	21.52
	Y	0.94	1.33	1.37	45.74
Barley	A	29.1 (3.30)	24.6 (2.91)	23.4 (2.87)	-19.58
	P	35.2 (3.09)	33.0 (2.48)	33.72 (2.26)	-4.20
	Y	1.20	1.34	1.44	20.00
Millets and other cereals	A	19.9 (2.26)	18.4 (2.17)	8.9 (1.09)	-55.27
	P	4.3 (0.38)	10.3 (0.77)	5.70 (0.38)	32.55
	Y	0.21	0.55	0.64	204.67
Ragi	A	5.9 (0.67)	NA	3.5 (0.44)	-40.67
	P	2.5 (0.23)	NA	4.45 (0.29)	195.00
	Y	0.42	NA	1.28	204.76
Gram	A	5.8 (0.66)	2.5 (0.27)	1.3 (0.18)	-77.58
	P	2.9 (0.25)	2.3 (0.17)	1.32 (0.08)	-138.48
	Y	0.5	0.92	0.99	98.00
Other pulses	A	38.0 (4.30)	33.9 (4.02)	28.0 (3.44)	-26.31
	P	5.4 (0.47)	20.5 (1.54)	9.59 (0.64)	77.59
	Y	0.14	0.60	0.34	142.85
Total foodgrains	A	881.8 (100)	840.2(100)	813.0 (100)	-7.8
	P	1136.6 (100)	1326.3 (100)	1487.65 (100)	30.88
	Y	1.28	1.57	1.83	42.96
Total cropped area	A	982.0	968.2	953.6	-2.89

Source: Various issues of statistical outline of Himachal Pradesh
A – Area in '000 hectares, P – Production in '000 metric tons, Y- Yield in tons per hectare

Table 2: Area under high yielding variety crops in Himachal Pradesh

('000 Hectares)

Year	Wheat	Maize	Paddy
1988-89	337.0 (90.30)	96.0 (30.46)	91.25 (94.8)
1996-97	360.47 (96.64)	162.41 (52.85)	78.43((95.99)
2004-05	353.29 (95.5)	242.76 (81.29)	75.21 (94.6)

Source: Various issues of statistical outline of Himachal Pradesh

Table 3: Consumption offFertilizers (N+P+K) in Himachal Pradesh

(Metric Tons)

Year	Kharif	Rabi	Total
1988-89	13553 (44.73)	16745 (55.27)	30298 (100)
2000-01	17292(48.64)	18260 (51.36)	35552 (100)
2004-05	18244 (39.44)	28009 (60.56)	46253 (100)
2005-06	19197 (40.02)	28776 (59.98)	47973 (100)
2006-07	18592 (37.96)	30389 (62.04)	48981 (100)

Source: Various issues of statistical outline of Himachal Pradesh
N- Nitrogenous P- Phosphatic K- Potastic