



Technological Changes in Agriculture in Haryana

- A Study in Karnal District

Dr. Yogesh

Assistant Professor of Economics, Govt. College Dubaldhan (Jhajjar)

ABSTRACT

Haryana agriculture has made rapid growth since the mid-sixties due to the new technological changes. But the agricultural performance differs widely across regions in Haryana due to considerable heterogeneity in agro-climate, resource endowments, dissemination of technology and the like. The present study covers growth and variations in agriculture performance in Karnal district comparative to Haryana during 1966-67 to 2005. This study is based on secondary data collected from 'Statistical Abstracts of Haryana'. It is evident from the analysis that the intensity of irrigation has an increasing trend during the above said period in Haryana and Karnal district. The density of tractors in Haryana and Karnal are continuously increasing but, in Karnal district, the density of tractors has increased more as compared to whole Haryana. The study also shows that there is also significant increase in the use of chemical fertilizers and pesticides. The intensity of cropping is higher in Karnal district than all Haryana Thus, the present study covers the agricultural performance of Haryana and its comparison to Karnal district during 1966 to 2005, in terms of growth, variability and the important factors affecting their performance.

KEYWORDS: Intensity of Irrigation, Density of Tractors, Chemical Fertilizers, Intensity of cropping and High Yielding varieties of Seeds.

The small state of Haryana, which was relatively backward area of the former well developed state of Punjab, made rapid progress in the field of agriculture since its inception in 1966 and of late has achieved a prestigious position among the other agriculturally advanced states of the Indian Union. The state has gone a sea change in agricultural production and the sign of the “Green Revolution” are evident in the state. This success in agricultural production in the state is dependent on the availability of different resources and the extent of their utilization. A good part of it is due to the adoption of new agricultural technology by the farmers which includes tractorisation, irrigation and use of high yielding varieties of seeds, use of pesticides. In Haryana, this new agricultural technology has been adopted since 1965-66. Before it, the farmers were using the traditional methods and in spite of the efforts by the government agencies only a few farmers of them were responding to improve practices. Haryana is the second richest food grain production state of India. So it is called ‘food bowl’ of the country. During the last thirty five years, food grain production of Haryana has increased six times, while that has increased thrice in India.

Haryana agriculture has made rapid strides since the mid-sixties in the wake of new technology. However, the agricultural performance differs widely across regions in Haryana due to considerable heterogeneity in agro-climate, resource endowments, dissemination of technology and the like. The inter district or regional difference in agricultural development arising out of these varied conditions tend to get further accentuated because of varying levels of investment in rural infrastructure and adoption of improved technology. Thus, the present study covers growth and variations in agriculture performance in Karnal district comparative to Haryana during 1966-67 to 2005.

METHODOLOGY:

The study is based on secondary data collected from ‘Statistical Abstracts of Haryana’. To evaluate the growth and variations in agriculture in Karnal district, the period has been taken from 1966-67 to 2004-05. The analysis has been made in terms of percentage and proportion etc.

RESULTS AND DISCUSSIONS:

The indicators of technological change in agriculture are shown in the table given below. The main indicators are intensity of irrigation, density of tractors, use of chemical fertilizers, and use of pesticides, intensity of cropping and high yielding varieties of seeds.

1. Intensity of Irrigation:

Irrigation is the artificial application of water to overcome the deficiencies in rainfall for growing of crops especially in the areas where the rainfall is meagre, concentrated and erratic. Irrigation is the most important factor responsible for the adoption of high yielding varieties and other technology by the farmer. It is evident from the table that intensity of irrigation is 83.70 percent in 2004-05 and it was 37.80 percent during 1966-67 in Haryana. Karnal is the advanced district, where intensity of irrigation is 94.5 percent in 2004-05 and it was 72.7 percent during 1966-77. In district Karnal, intensity of irrigation has increased 100 percent during 1995-96. It is evident from the analysis that it has an increasing trend during the above said period in Haryana and Karnal district. Thus the analysis shows clear cut variations in the intensity of irrigation in Haryana and Karnal district.

2. Density of Tractors:

Tractors are an important input in agriculture in Haryana. Prior to the introduction of new technology, most of the farmers were using indigenous farm implements, where as a small number of them were using tractor, that for the preparation of land only but at present, a large number of farmers are having tractors for use on the farms. It has made a perceptible change in the attitude of the farmers towards mechanical cultivation. The density of tractors has increased from 1.04 in 1966-67 to 37.33 tractors per thousand hectares during 2004-05 in Haryana. But in Karnal district the density of tractors has increased from 2.10 in 1966-67 to 45 during 2004-05. The density of tractors in Haryana and Karnal are continuously increasing. But, in Karnal district the density of tractors has increased more as compared to whole Haryana. The higher rate of growth was found in Karnal district.

3. Use of Chemical Fertilizers (Nitrogenous, Phosphatic and Potasic)

It is well-known fact that the potential yield of a crop can be obtained through the balanced use of fertilizers. A breakthrough in fertilizer consumption was observed with the introduction of intensive agricultural development programme in the state. The introduction of high yielding varieties of crops which are more responsible to high dosages of fertilizers has increased the fertilizer consumption tremendously. The use of chemical fertilizers has increased from 290.2 kgs in 1966-67 to 17504.9 kgs during 2004-05 per hundred hectares of cropped area in Haryana. But in Karnal district, the use of

chemical fertilizers has increased from 1354.7 kgs to 37151.3 kgs during 2004-05 per hundred hectares of cropped area. It is evident from the analysis that this input has an increasing trend during the above said period in Haryana and Karnal district.

4. Use of Pesticides:

The use of pesticides has increased from 5.94 kgs in 1966-67 to 73.15 kgs during 2004-05 in Haryana per hundred hectares of cropped area. But in Karnal district, it has increased from 103.03 kgs in 1985-86 to 83.25 kgs during 2004-05. The analysis shows that the use of pesticides has increased in Haryana during 1966-67 to 1991. After 1991, the use of pesticides has decreased. But in Karnal district, it has increased from 1985-86 to 1999-2000. After 2000, it has decreased continuously. The use of pesticides was found higher in Karnal district than all Haryana. It also indicates the regional variations in Haryana in the use of pesticides during the above said period.

5. Intensity of cropping:

Intensity of irrigation depends on the managing efficiency of the farmers, availability of irrigation facilities, types of seeds used and the use of machines, etc. The analysis shows that the intensity of cropping is higher in Karnal district than all Haryana. It has increased from 1966-67 to 2002-03 in Karnal district. But after it, it has decreased. But in Haryana, it has increased continuously. Thus, the analysis shows the clear-cut variation in intensity of cropping in Haryana and Karnal district.

6. Use of High Yielding varieties of Seeds (HYVs):

Since the area under cultivation cannot be extended beyond limits and the indigenous varieties of different crops cannot give higher yields. The farmers were in need of such crop varieties, which could give more yields per unit of area in a comparatively shorter period. With the evolution of higher yielding variety, seeds of various crops like wheat, rice, maize, etc., a breakthrough in agricultural productions have been possible. The use of high yielding varieties of seeds was started in 1966-77. The table shows that the use of high yielding varieties of seeds was higher in Karnal district than all Haryana. The area under HYVs was found maximum in Karnal district than all Haryana.

Table 1: Major indicators of Technological Change in Agriculture in Karnal District of Haryana from 1966-67 to 2004-05

S.No.	Years	1		2		3		4		5		6	
		Haryana	Karnal	Haryana	Karnal	Haryana	Karnal	Haryana	Karnal	Haryana	Karnal	Haryana	Karnal
		Intensity of irrigation (Net area irrigated/ Net area sown × 100)		Density of tractors per thousand hectares of cropped area (Number of tractors/total cropped area × 1000)		Use of chemical fertilizers per hundred hectares of cropped area in kgs (chemical fertilizers in kgs/total cropped area × 100)		Use of pesticides per hundred hectares of cropped area in kgs (pesticides in kgs/total cropped area × 100)		Intensity of cropping (total cropped area/ net area sown × 100)		Area under HYVs as percent to total cropped area (Area under HYVs in hectares/ total cropped area × 100)	
1	1966-67	37.80	72.70	1.04	2.10	290.2	1354.7	5.94	DNA	134.36	130.73	DNA	DNA
2	1970-71	43.00	74.30	2.48	3.54	1413.4	3327.3	8.31	DNA	139.05	146.10	18.52	28.18
3	1976-77	49.30	77.93	5.24	7.78	1834.82	5936.1	27.70	DNA	144.87	151.84	31.43	52.42
4	1980-81	59.30	89.50	9.65	16.70	4226.0	10347.8	39.36	DNA	151.64	152.47	39.13	65.49
5	1985-86	62.20	91.60	14.84	21.48	6645.0	12379.4	64.41	103.03	155.02	162.65	48.30	73.52
6	1990-91	72.70	98.71	22.00	29.15	9905.3	17065.3	87.25	174.9	165.57	189.67	46.19	69.39
7	1995-96	77.00	100.00	27.12	35.36	12118.6	20440.4	85.37	109.84	166.59	184.85	45.23	69.40
8	1999-2000	81.30	99.50	31.86	38.97	14957.7	27396.6	83.43	104.89	169.74	182.69	56.08	70.00
9	2000-01	83.90	98.90	34.28	39.31	15213.3	31919.8	82.18	104.54	173.43	200.53	53.83	64.33
10	2001-02	82.40	99.50	35.09	38.50	15573.9	30053.5	79.46	103.42	177.17	193.43	53.85	73.11
11	2002-03	85.80	99.50	36.85	39.42	16298.2	29356.1	79.97	89.47	174.52	200.00	54.06	70.92
12	2003-04	84.00	99.50	36.25	43.64	15796.9	32347.4	74.05	84.20	180.76	195.94	54.85	70.73
13	2004-05	83.70	94.50	37.33	45.00	17504.9	37151.3	73.15	83.25	182.12	197.96	54.79	70.10

DNA: Data not available

Source: Based on calculations from the data obtained from different statistical abstracts of Haryana, 1966-67 to 2004-05, Chandigarh

CONCLUSION:

Thus, the present study covers the agricultural performance of Haryana and its comparison to Karnal district during 1966 to 2005, in terms of growth, variability and the important factors affecting their performance. The study has considered the six important indicators of technological change in Haryana. The analysis indicates the regional variations through these technological indicators.

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