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A Brief Study About The Green Revolution

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ABSTRACT: The green revolution raised the stature of Indian agriculture but the problem still persisted. The biggest of them is how to feed the growing population which is increasing at very fast rate. With the gradual closing of land frontier, food required for coming generation can only be achieved through adoption of modern technology. Among all the components of modern inputs, use of chemical fertilizer has been accepted as a key weapon in the war against the hunger all over the world.

It is also true that agricultural development in India has reduced the danger of famine but not malnutrition or regional imbalance. The main region behind the unbalanced progress in agriculture is due to non-adoption of new input technology uniformly by the farmers of all the regions. Adoption was faster in irrigated areas than the rainfed areas of the country. The imbalance of development taking place between irrigated and rainfed agriculture can be mitigated through the use of key input i.e., use of chemical fertilizers in the high potential areas. This will solve twin objectives of the society on one side it will fill the difference of development taking place through the agricultural growth and on the other it will solve the food problem for coming generation.

KEYWORDS: Agriculture, Fertilizers, NPK, Green revolution.

Introduction

It is very essential from the policy point of view to identify high-potential areas to boost use of chemical fertilizers. Such areas, requires long-run policy strategies to increase fertilzer consumption.

Empirical studies indicated that fertilizer use was highly uneven among the states, both in respect to total quantum and use per hectare. Even within the states, use of fertilizer was concentrated among a few districts. Therefore, it is beneficial to probe into the rates of diffusion, and determinants of fertilizer consumption in such regions of the country

Rajasthan agriculture displays certain peculiarities. The divergence in agro-climatic situations in this state is perhaps the highest in the country. On account of this there will be obviously wide variations in the level of fertilizer use among the different districts of the state,

There has been no systematic Enquiry carried out to provide quantitative significance to various factors behind the inter-temporal and inter-spatial difference in fertilizer consumption in the state. Therefore, the present investigation was undertaken with following specific objectives:

(i) To examine the pace and pattern of fertilizer use in Rajasthan.

(ii) To estimate the functional relationship of fertilizervariablesgrowth vis-a-vis growth in structural associated to fertiliser consumption.

(iii) To identify the factors affecting fertilizer use indifferent regions of the state.

(iv) To estimate the crop yield response in relation to fertilizer use for a selected crop in different agro-climatic regions of the state.

In the present study, difference in fertilizer consumption was analysed from various

angles. At first, state is considered as a unit of observation and after that disaggregation extended to the different districts. Similarly, factors affecting fertilizer consumption at state level are identified. This analysis is also carried out for selected districts on the basis of growth rates viz. high, medium and low growth zone The growth potential across different districts is work out at two base years proportion of structural variables related to growth. The variations in the level of fertilizer consumption at macro level is justified in the light of response function generated for the wheat crop in different agro-climatic regions of the state.

For the present study, all the macro level information were collected from of the records and publications of the department of agriculture, Govt. of Rajasthan, Jaipur. Various issues of fertilizer statistics published from F.A.I., New Delhi, micro level data were collected from comprehensive scheme of cost of cultivation for principlecrops in Rajasthan run under the department of Agricultural economics, R.A.U.. Bikaner

The nutrient-wise trend in fertilizer consumption from three angles 1.e., absolute term, kilogram per hectare of cropped area basis and kilogram per hectare of irrigated area basis was examined. For the estimation of trend linear and compound growth models were tried and only beat fit models were used for discussion. The relationship examined for two temporal phases i e, from 1966-67 to 1978- 79 and 1979-80 to 1990-91 The estimation was also carried out for pooled period (1966-67 to 1990-91]. At the state level, ratio, shares and seasonal variation were examined.

The difference in interdistrict variations over time observed were checked. The difference was also after removing trend effect from the original data, further rank correlation coefficients were work but to test any change in placement of district over time.

Identification of factors behind the actual and potential growth of fertilizer across different districts was examined through estimation of multiple regression function for two points of time. For the first period [1966-67 to 1978-79] relationship was established with four selected variables in the base year 1966-67. There variables were cropping intensity, proportion of area under high yielding variety, proportion of area under irrigation and average yield of wheat per hectare. The growers price ofwheat was also taken as factors affecting fertilizer growth rates across the districts because without including price variable relationship could not be establishedStep wise log linear form was used for the quantitative significance of selected variables at state level and selected districts, one from high growth [above 15 per cent), two from medium growth [10 to 15 per cent] and one from low growth [below 10 per cent). Thirteen variables were tried for the state level where as only eight of them were used to explain variation in fertilizer consumption [total plant nutrient per thousand hectare of cropped area).

The different functional forms were tried to estimate the relationship between wheat yield and quantity of fertilizer used on farms on different agro-climatic zones of the state. On the basis of scattered diagram best fit model was selected for further economic analysis. The relationship was obtained for approximate thirty wheat growers for each zone.

In Rajasthan fertilizer use is very low as compared to other states of the nation. The state shared only 2.8 per cent of total fertilizer consumption whereas it has 10.5 per cent of gross cropped area of the country. In the state, pattern of growth of fertilizer consumption has not been steady over time. From 1966-67 to 1990-91 all the plant nutrients registered an upward trend with absolute, per hectare of gross cropped area and per hectare of irrigated.area basis. In absolute term, nitrogen, phosphate and potash

consumption marked an increase of 17, 62 and 17 times, respectively. Whereas magnitude of rise on the basis of per hectare cropped area were found to be 14 times in nitrogenous, 15 times in phosphatic and 22 times in the use of potassic fertilizers. The use of plant nutrients with respect to irrigated area registered 8 times increase for nitrogenous fertilizer 22 times increase by phosphatic and 13 times increase in the use of potassic fertilizers.

In the first temporal phase of the green revolution era i... 1966-67 to 1978-79, nitrogenous, phosphatic and potassic fertilizers were found to have 16.03, 15.08 and 19.08 per cent annual compound growth respectively. The estimated trends of the per hectare fertilizer use in cropped area was found slower as compared to absolute terms. which It was due to expansion in cropped area in the state was higher than the increase in the use of each plant nutrients. The annual compound growth rate registered 15.15, 14 54 and 17.78 per cent by nitrogenous, phosphatic and potassic fertilizer respectively, In case of per hectare irrigated area, nitrogen recorded 12.23 per cent, phosphate 11.63 per cent and 14.80 per cent by potash fertilizers.

In the second phase (1979-80 to 1990-91) slackening tendency in the growth pattern was observed in each plant nutrient over the first time phase.

The annual compound growth rates registered (absoluteterms) by nitrogenous phosphatic and potassic fertilizers 7.02 were 7.12, 15.74 and -2.12 per cent, respectively. The nutrient-wise intensity in cropped area were per cent (nitrogenous) 15.63 phosphatic and -2 22 per cent (potassic). The intensity rate in irrigated area worked out to be 5.60 per cent in nitrogen, 14.09 per cent in phosphatic fertilizers. with as negative growth of 3.52 per cent per annum during the second temporal phase.

Role of NPK

The ratio and share of NPK was found to move in favour of phosphate and over all consumption ratio was far from the level of satisfaction. The gap of use of N and P in relation to K widened over time in the state. The main reason behind which that was the growth in the use level of which declined in the state. The ratio registered in the year 1990-91 was 34.82, 17.42, which was far away from the recommended ratio whilethe ratio of N and P was reached at the level of 2 : 1 which was ideal ratio of soil application of these nutrients.

The further growth in N and P205 should be maintained with the same ratio for keeping the balance use in the state. The larger quantity of fertilizer nutrients were observed in Rabi season over kharif season in the state. The 20-50 per cent variation in the use of Nitrogenous fertilizer was observed in kharif and 50-80 percent in rabi season. The variation of phosphatic fertilizer was 20 to 60 per cent in kharif and 40 to 80 percent in Rabi season. The variation observed for kharif season was 20 to 60 percent.The compared growth in the use of fertilizer was found less to expansion of cropped area as in the districts. Because, slow growth were marked by almost all the districts over their absolute term growth.

The slackening tendency observed in the second temporal phase might be due to two reasons. One, as growth is relative term, and thus, an increase of equal magnitude in a Article aerationoftwo series will give rise to different magnitudes of growth rates. Incidently greater is the initial status less will be the growth rate. The second reason, which can be put forward is in that when technology is already adopted and one region and its growth becomes adoption accumulated is faster in other regions popularised slower but, as its the knowledge by the adopters of one region is used by the byte adopters of secondregion and the hitch in adoption becomes less.

SCOPE

The scope of growth potentialities across different districts were examined by the estimated results of multiple regression model. There were only two variables, namely, cropping intensity and average yield of wheat per hectare which showed positive impact on growth rates (1979-80 to 1990-91).

The proportion of area under HYV and proportion of area under irrigated recorded negative impact on fertilizer growth rates. The relationship indicated that further growth could be obtained through increasing the cropping intensity and yield increasing technology in the state. At the same time it suggest to identify the way to extend the point of early saturation level through the use of these structural variables associated with fertilizer growth in the state.

The agroclimatic variation in the state compelled to analyse the factors affecting fertilizer use both at state level and selected districts from the different regions.

The best possible set of explanatory variables chosen for the state were short term credit, cropping pattern index, proportion of area under surface water irrigation, and proportion of area under HYV. The model indicates that 1 per cent increase in the short term credit advanced through the state co-operatives registered 1.06 per cent increase in the level of fertilizer use in the state. Whereas 1 per cent rise the area under fertilizer intensive crops and proportion of area under surface water leads to an increase of 1.28 and 1.41 per cent, respectively. With the rise in one per cent level of proportion of area under HYV leads to decline of 0.16 per cent consumption in the state.

In the high growth region, among four selected variables only one variable proportion of area under HYV leads to an increase of 0.24 per cent with 1 per cent rise in the area under HYV. The relative price coefficient was found that price to have elasticity of 2.31 per cent. Which implied one per cent fall in the level of relative an increase in the level of fertilizer recorded consumption by 2.31 per cent. The rainfall and cropping were pattern found to exert negative impact on fertilizer use as one per cent rise in the variables would leads 0.29 and 0.13 per cent fall in the consumption level, respectively.

Conclusion

All in all the green transformation saved north of a billion of individuals all around the world from starvation and gave more food sources. In spite of the fact that, it affected the climate like utilizing elevated degrees of pesticides and synthetic compounds.India has made an immense accomplishment in term of the Green Revolution, as it has given a phenomenal degree of food security. It has pulled countless needy individuals out of destitution and assisted numerous non-poor with peopling keep away from the neediness and yearning they would have encountered had it not occurred. This transformation has saved more than a billion group all around the world from starvation.

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