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Fertilizer Consumption and Its Regional Disparity

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ABSTRACT: The study entitled "Fertilizer consumption and its regional disparity in Rajasthan" was undertaken with a view to identify the inter-temporal and inter-spatial differences in the use of chemical fertilizers in the state. The phenomena was analyse from both the angles. At first, macro-view about pace and pace and pattern, growth potential and factors affecting fertilizer use were undertaken, In the second, wheat yield response to fertilizer use on farms situated in different agroclimatic zones were analysed to capture the micro view in the state.

Inter-district variation in fertilizer consumption (kg/ha) declined over the years. The gap declined from 80.33 percent (1966.67) to 69.65 percent (1990-91). There was no change recorded in during the placement of districts in fertilizer consumption (kg/ha) at observed points of time.The growth rates in the fertilizer consumption across districts were found to be positively affected by the different base year proportion of cropping intensity and average yield in the state where as negative impacts were shown by the proportion of area under HYV and proportion of area under irrigation.

Plants require macronutrients and micronutrients for its development and manures are the wellspring of these supplements which upgrade the plant development as well as keep up with the dirt ripeness. The motivation behind this study is to assess the example of manure utilization, creation patterns in India and propose the practical utilization of composts in view of prerequisites of different yields, agro-climatic zones, soil and environment. The information for significant manure consuming zones and states assists us with understanding utilization design in our country. During the period 2007-11, it was seen that west zone was consuming 31,116.73 kilotonnes of manures which was the most noteworthy among the four zones and was likewise having most noteworthy complete yearly build development rate level of 9.68. Among significant compost consuming territories of India Uttar Pradesh was viewed as consuming most extreme manures, that is 16,621.29 kilotonnes. Rice and wheat are the significant harvests which areconsuming 37% and 24% of the complete composts consumed in India among different yields. Climatic elements, similar to precipitation design play an exceptionally vital part in the utilization of manures as their interest increment with an expansion in flooded regions. Agro-natural zone no.7 was consuming 177.1 kg/ha of compost which was the most elevated among the different agro biological zones of India. The paper likewise means to suggest that manures ought to be utilized in a reasonable way through coordinated administration of supplement including the utilization of compound composts, biofertilizers, fertilizer and vermicompost. Adjusted utilization of composts will diminish hurtful impacts of substance manures on the climate and will help in making our horticulture manageable.

KEYWORDS: Fertilizers, Macro-analysis, Nitrogenous growth, Agro-climatic zone, Inter- temporal variation

Introduction

The most challenging problem faced by the country today is to achieve rapid and sustained increase agricultural production to feed the growing population which of is increasing with a tremendous rate about 2.5 per cent per annum. By the 2000 AD the number of mouths to feed in the country [U.N.F.P.A. will have jumped from more than 100 crore Report]. The amount of projected food requirement by the teeming millions will be around 210 million tonnes by the end of eighth five year plan [Planning Commission].

The increased use of fertilizers has created revolutionary change in agricultural production and yield throughout the parts amount the world. However, there is great variation in of fertilizers used in unit area in different depending upon the nature of soil, climate, availability of irrigation facilities, cropping pattern, response of different crops to fertilizers, availability of fertilizers etc. The growth of fertilizers use level at any particular place depends upon the diffused use of fertilizers in more and more crops by increased numbers of users on an increasing rate until recommended level is achieved for each crop.

The massive efforts have been made by the government to optimise fertilizer production, distribution and usage. Attention of media after, the massive two stage devaluation of the rupee has resulted into intended cut in fertilizer subsidy in 1991-92 budget and resultant sharp rise in their prices by 40 per cent generated heated debate in political, academic and social circles

There could be various policy options pertaining to decontrol, one option is to identify high potential areas for increasing level of fertilizer use. Such identified area, would strategies areas. need complete analysis of long run policy increase level of fertilizers use in these areas.

Factors Affecting Fertilizer Use

The evidence on wide variability in the levels of adoption, nature and number of crop fertilized and rates of fertilizer application, over farms, crop as well as time underscores the need for understanding the underlying reasons.

On the basis of microeconomic factor demand theory,several researchers [Desai 1969; Desai and Bandhopadhyay1973; Desai and Mellor 1969; and Roa 1970] postulate thatsize and certainity of returns from the fertilizer use isthe main determinants of fertilizer demand. Thus, prices (ofinputs as well as output) play a important role as also thephysical response from fertilizer application.

The studies conducted at macro level usually considersprice as main determinant while micro studies, emphasized,apart from prices, factors which influences the adoption anddiffusion of an innovation. The analytical approches used inand findings of the studies conducted at both the level canbe presented under two sub sections.

- **Macro level analysis.**
- **Micro level analysis.**

Macro Level Analysis :

Heady and Yeh (1959) used different sets of explanatory variables in the united state to estimate national and regional demand functions for individual nutrients and commercial fertilizer. The data were transformed to logarithmic values and then the linear functions were fitted. National demand for all commercial fertilizer for the period 1926-56 and 1910-1956 were estimated. The regional demand for all commerical fertilizer was found to be significantly responsive to the price of cotton, tobacco, fruit and truck crops, but not to the price of small grains and hay in mixed farming areas. The elasticity sign for fertilizer with respect to crop land acreage was found to be negative (i.e. -1.691 for nitrogen, -2.368 for phosphoric acid and -1.294 for potassium), providing the indication of substitution of fertilizer for land. The findings suggested the demand function, particularly when this relates the quantity of fertilizer to fertilizer/crop price ratios, shifts to the

right, especially in those areas whose technical knowledge on fertilizer response was more recent. The data for total nutrients suggested a higher elasticity coefficient for fertilizer price (1.e. -1.721) and a uniformly higher coefficient for time (i.e. 0.174).

Micro Level Analysis

Anderson (1956) fitted a demand curve for nitrogen use at Iowa Agricultural Experiment Station on corn derived from the farmers' expected corn yield response from nitrogen. The subjective demand curve for nitrogen use (power function) on corn was also derived by questioning farmers on nitrogen use at various nitrogen and corn prices. The amount of fertilizer used in the previous year and size of farm were found to be significantly related to the amount of fertilizer used on owner and tenant farms, having elasticity coefficients of 0.146 and 0.642 respectively. The model used was :

Y = 0.2720 x -0.108 x20.146 x30.642

Where,

Y = Tonnes of all fertilizer used per farm ;

X = Capital investment ;

X2 = The amount of fertilizer use during previousyear; and

X3 = Farm size in acres.

There subjective demand model was :

Q = 65.33 p-0.867

Q = Quantity of ammonium nitrate; and

P = The price ratio (corn/fertilizer price ratio)

Pace and Pattern of Fertilizer Use

The growth of fertilizer use at any particular place can be experienced either through intensive or extensive use or by both. The fertilizer use was reported to be expanded vertically in irrigated areas and horizontally in rainfall areas Sidhu, 1991). On the line of above mentioned facts it was decided to analyse fertilizer diffusion pattern. Over time at the state level from three different angles. Firstly, by measuring fertilizer growth in absolute term, secondly by measuring growth in fertilizer per unit of cropped area and at last in order to high light, fertilizer use in irrigated areas growth was also worked out by measuring fertilizer use per unit of irrigated area. A dissection analysis was also made in terms of all plant nutrients.

The uneven trend at the state level is contributed by various factors. In order to analyse each one of them separately disaggregate study across the different districts was also made on the same line as carried out at the aggregate level.

Districts which enjoy favourable socio-economic, institutional, infrastructural facilities and favourable agroclimatic conditions contribute more to diffused and intensive use of fertilizers than the districts which do not enjoy such factors.

For analysis of fertilizer consumption in the districts of Rajasthan Ajmer, Alwar, Banswara, Bharatpur, Bhilwara, Bundi, Chittorgarh, Dungarpur, Ganganagar, Jaipur, Jhalawar, Kota, Nagore, Pali, SawaiMadhopur, Sirohi and Tonk were considered. Consequently, the districts Barmer - Jalore, Bikaner - Churu, Jaisalmer Jodhpur, Sikar JhunJhun and Udaipur - Rajsamand were reaggregated to form the consistent time series data.

The trend was also worked out after spliting the study period in two separate parts, i.e., from 1966-67 to 1978 - 79 and from 1979-80 to 1990-91, to know the recent growth in fertilizer use.The trend analysis was made by estimating two functional forms, i.e., linear and exponential functions. On the basis of scatter diagram of the data with respect to time, the value of the coefficient of determination (R2 value), and the statistical significance of estimated coefficients the best form was identified.

CONCLUSION

Lately, dissuaded by the antagonistic effect of over/under application or cover/imbalanced utilization of composts without considering the harvest needs and soil wellbeing/ripeness, scientistsare chipping away at making a change in

perspective to request) driven exact use of supplements with a general objective of improving the uso proficiency of applied supplements. Present paper sums up the issues like harvest supplements the executives through the utilization of supplement stewardship specifically perfect opportunity, night source, ideal spot and right rate Expanding NUE and benefit needs the science-based change of paces of supplements application, and take better-educated choices to make cultivating practical through effective asset use with least adverse consequence on the ecological quality: Information from the drawn out compost tests obviously portrays improvement in soil substance, physical and organic states of soils in different yields and soil type under adjusted (100 percent NPK) and INM (100 percent NPK+FYM) medicines even following 50 years of trial and error. Coordinated soil fruitfulness the board with present day apparatuses and incorporation of biotechnology are vital for advancing food creation and accomplishing higher supplement proficiency through best administration rehearses.

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