

Utilization of Fertilizers in Agricultural Land

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ABSTRACT: There are large numbers of factors which affect the farmers demand for fertilizers. This demand for fertilizers primarily depends upon the state of awareness and Knowledge of farmers regarding fertilizer use on crops he commonly grows whereas rate of fertilizer application and crop to be fertilized mainly depends upon profitability at farm level. Thus all the factors which affect the farmers decisions are regarding fertilizer use at macro level derived basically from micro economic factor demand theory. These variables be can regrouped into three sets of factors (1) Economical (2) Technological and (3) Institutional. On the availability of information at macro-level the selected variables were defined as follows. It likewise expands water and supplements use productivity, further develop grain quality, soil wellbeing and give better monetary re-visitations of ranchers and helps in supportability. Along these lines, for maintainable development in agribusiness area, it is basic to diminish request of substance manures without hampering food creation. This can be accomplished by having a superior comprehension of environment of India, its dirt, agro-natural zones and harvest explicit compost prerequisites. The interest of compost for utilization can likewise be satisfied by acquiring effectiveness the manure application strategies, circulation framework and expansion administrations, expanding credit offices and upgrading compost endowment strategy. Compost is one of the fundamental data sources expected for upgrading rural creation and the ranchers' pay in India. India positions

second on the planet and first among the South Asian Relationship of Territorial Participation (SAARC) nations regarding complete manure utilization. Nonetheless, the normal manure application per hectare of around 145 kg in India during 2019-20 was much beneath than that in the SAARC nations of around 174 kg ha⁻¹. There are gigantic highway and between local varieties in compost use. The progressions in government strategies relating to compost dispersion and use have affected altogether the supplement use proportion.

KEYWORDS: Yield response, Cropping pattern, irrigation intensity, Cropping Intensity, Soil Fertility, Seed distribution.

INTRODUCTION

The intensity of cropping at state as well as at district level was assumed to have positive impact on the a level of fertilizer use in particular year. The cropping intensity expressed in term, of percentage was used as independent variable. The formula of compilation could be
Total Cropped Area in Year t /Total Cultivable Area in Year t*100

Irrigation Intensity (INTENI)

Intensity of irrigation was included as one of the determinants to have positive impact on fertilizer consumption in Rajasthan and representative districts of three growth regions. The percentage of irrigation intensity used was obtained from the formula given below.

INTENT=Total cropped area received irrigation in year /Total Cultivable Areat*100

Proportion of area under High Yielding variety seeds (PHYA)

Inclusion of proportion of HYV's area as independent variable was made due to its close positive association with level of fertilizer use. This variable was tried for both the level of aggregation. The five principle crops where HYV area included were bajara, jowar, maize, wheat and rice.

Proportion of Area Under Irrigation (PI)_t

The level of irrigation can be defined as most important factor affect the level of fertilizer use at any place. Hence proportion of area under irrigation was selected as independent variable for both the levels to be analysed. Irrigation qualities were also assumed to have impact of fertilizer use at the state as a whole. Two more variables tried for state were proportion of area under surface water irrigation (PI)_t area under ground water.

Cropping Pattern Index (CPI)_t

The change in the area under fertilizer intensive crops can also be used as a variable to predict the change in the level of fertilizer use. The crops included as a fertilizer intensive were rice, wheat, sugar cane and cotton when phenomena was explained at state level.

These were the crops which consume more than 75 per cent of applied fertilizer in India (NCAER). Hence weighted cropping pattern were obtained after giving weights to area under above mentioned crops.

The highest weight was given to area under rice followed by wheat, sugarcane and cotton. Cropping pattern Index was obtained by the following formula. The weighted area under fertilizer intensive crop in Year t * 100.

Weighted area under fertilizer intensive crop in the base year (1966-67). The same crops were also taken to form cropping pattern index as variable to explain fertilizer consumption in two selected districts namely, Ganganagar and Bundi.

where as for remaining t.. districts Jaipur-Dausa and Nagore only wheat and Rapeseed & mustard were selected to construct the cropping pattern index for these districts due to negligible area reported under rice, sugarcane, and cotton in these two districts of the state.

Rainfall (R)_t

Rainfall was taken as a Proxy for agroclimatic factors which affect the fertilizer consumption of any region or the state. The three version of rainfall were used to capture impact of distribution of rainfall on fertilizer use in the CPIT state. These version were South-West Rainfall (R_{ts-w}), South - West Rainfall (R_{ts-w}) and total Rainfall from June to May (R_{tJ-M}). Only total rainfall figures were used for analysis of impact of agroclimatic factors on the level of fertilizer consumption in selected districts.

Short Term Credit (STC)

Loan; advanced in the form of short term credit per hectare of cropped area were used to assess the impact of institutional factors on the level of fertilizer use in the state. Due to non-availability of data, this variable could not be tried for the selected districts.

Weighted Fertilizer price Index (WPPI)

Though the fertilizer prices were under statutory control for the period under study, an attempt was made to construct weighted price index of gross fertilizer consumed. The prices taken as the indicator of N, P, k Nutrients were urea, DAP and Mop. respectively, the weights being proportional to the share of N, P205 and K20 in the total fertilizer consumed in the state or districts under study.

Relative Prices of Fertilizers (RPE)

At the state level analysis, the weighted fertilizer prices deflate by lagged general prices index of agriculture commodities was used to assert the impact of relative price on the level of fertilizer

consumption for the district level analysis the lagged farm harvest price of wheat was taken to deflate the weighted fertilizer prices. because it was indicator output price in the state. difficult Because different types of micro environment where prices particular could not be taken as a variable because it would be over parametrization of the phenomena under investigation. to select there are farm harvest.

Specification of Fertilizers

In most of the empirical works two approaches have been generally used to measure the impact of changes in various factors on fertilizer use. The normative approach uses fertilizer response functions and optimising behaviour assumptions to derive fertilizer demand using production function or programming tools. The other approach is direct estimation of fertilizer demand through various selected variables. There is serious limitation of the direct estimation of fertilizer demand. Farmers' demand for fertilizer consumption being a derived one, this may be analysed only in the context of overall decision taking process. The theoretical frame-work of the model used for the study has been discussed and presented below. Multiple linear regression function were fitted for estimating the coefficients of the selected variables in the models. The estimates of the model specified for the study were obtained by using OLS technique.

In time series analysis there is usually the existence of positive serial correlation in the residues where all the independent variables are exogenous and non-stochastic the test of non-auto correlation was tested through Durbin and Simple correlation matrix between explanatory variables for all the models worked out to test the presence of high correlation between them.

Crop Yield Response to Fertilizers:

The crop yield response to fertilizer use plays a significant role in the process of

accelerating farmers fertilizer demand. Given the fertilizer output price relationship, the level of fertilizer use increases with increased response to the use of fertilizers. Similarly, given the responses of the crop yields to fertilizer use, the level of fertilizer use is influenced by the price of fertilizer relative to the price of product.

In the short run, the shape of crop yield response to fertilizers is chief determinant of level of application and crop to be fertilised across different farms of a region or state. The shape of fertilizer response function in turn influenced by a number of agroclimatic factors such as rainfall and its distribution, irrigation and its quality, genetic characteristics of seeds, fertility of soils, proportion of area under fertilizer intensive crops (cropping pattern), etc. These all may be said as shifters of demand for fertilizers.

Therefore, it was pertinent to capture the effect of micro agroclimatic regions on the crop yield response to fertilizer use. Most of studies on fertilizer response of crops were made through experimental observations where most of the variables affects the relationship were under the control of researcher. At the farmers' field, it was very difficult to study the relationship of crop yield difference due to the difference in the level of fertilizer use. Because it assumed that intra farm variation in yield was due to only one factor 1.0. the level of fertilizer use. However, the selection of wheat crop for this purpose provide an opportunity to study the fertilizer response function at farmers level in the state. The extent of adoption of technology assumed at the same level at least at the regional level for this crop. It is the only crop which is grown all over the state and also reported as fertilizer using crop in the state.

Conclusion

There is worry that rural creation in emerging nations will cause ecological dangers later on, as creation should

increment to fulfil the developing interest for food. Escalation prompts high contributions of supplements as mineral composts and creature feed. Significant pieces of these data sources spill from the framework as supplement draining to groundwater and vaporous misfortunes to the environment. Tension on the current rural land might increment by developing interest for useful land and corruption of the current farming area base. Development of horticulture by and large prompts enormous deforestation.

The review introduced in this report focused on the communications between animals creation, crop creation and land use. The connection among domesticated animals and yield creation is through the interest for creature feedstuffs. This report presents long haul situations depicting these communications and the potential ramifications for crop creation and creature squander creation. As the total populace is supposed to settle in the final part of the twenty-first hundred years, the situations should cover a time of 50-100 years to incorporate the effects of human populace numbers.

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