FACTORS INFLUENCING FERTILIZER PRODUCTION 
AND CONSUMPTION IN INDIA

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ABSTRACT

The studies were conducted to find out the trends in production and consumption of fertilizers and also to examine the effects of various factors viz., price, area under high yielding varieties, gross irrigated area and subsidy on its consumption. The time series data from 1975-76 to 1999-2000 was taken into account for the study. The results indicated that consumption of fertilizers increased at the rate of 11% over the period under report whereas the growth rate for fertilizer production was 10.6%. Among the factors affecting fertilizer consumption, subsidy emerged to be the most important factor followed by area under high yielding varieties and gross irrigated area. Farmers should be exhorted to go for balanced use of fertilizers, increasing area under high yielding varieties and harnessing available irrigation potential.

INTRODUCTION

In India fertilizer consumption increased from less than 50,000 tonnes in 1950 to 18.37 million tonnes in 1999-2000 and the food grain production has increased from 50 million tonnes to 230 million tonnes in the same period. The spectacular increase in the production through green revolution was solely feasible with many fold increase in use of fertilizers. India now ranks fourth in total fertilizer consumption after USA, China, and Russia. The main factors responsible for this increase in fertilizer use seem to be firstly, the Govt. policies to accelerate food production which has been taken up through increase in irrigation facilities, evolution of fertilizer responsible HYV’s etc.,besides subsidy to enhance its consumption. Secondly, non-price factors have been as important as price factors in determining the pace and pattern of growth in fertilizer use (Desai, 1986).

Between the price and non-price factors behind the growth in fertilizer use, the latter have played an important role. The establishment of National Agricultural Extension System, thousands of fertilizer trials on farmers’ fields and development of cooperatives and other institutions to supply increasing amounts of credit to farmers, contributed to generating growth in fertilizer demand. To meet the rising demand, Govt. established and expanded the fertilizer distribution system, enlarged the availability of fertilizer through domestic production and imports and controlled the regional allocation of supplies.

Substantial and sustainable growth in agricultural production is required to meet the basic necessities of a large and growing population. It is also needed to generate the agricultural surpluses required for economic development with emphasis on employment and equity. As fertilizer is one of the most important component in agricultural production, its adequate supply is of great importance. Thus fertilizer production and consumption needs to be thoroughly examined, along with the factors responsible. Keeping this in view, the present study was undertaken with the following objectives:

1. To study the dynamics of fertilizer production and consumption
2. To examine the factors affecting fertilizer consumption and
3. To suggest the suitable policy measures.

MATERIAL AND METHODS

The time series data (1975-76 to 1999-2000) regarding the fertilizer

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consumption, production, average fertilizer prices, area under high yielding varieties, gross irrigated area and other required informations were collected from different volumes of Journals like Fertilizer Statistics, Fertilizer News, Indian Agriculture in Brief, Agricultural Prices in India and Agricultural Situation in India. The compound growth rates for fertilizer production and consumption were worked out using following model

\[ Y_t = AB^t \]

Where,

\[ Y_t = \text{Consumption/Production} \]
\[ A = \text{Constant} \]

Linear model

\[ Y_t = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + \rho \]

\[ Y_{t-1} = \text{Fertilizer consumption (in 000' tonnes) in period t-1} \]
\[ \rho = \text{Coefficient of } Y_{t-1} \]
\[ x_1 = \text{Subsidy (Rs. Crore)} \]
\[ x_2 = \text{Average prices (Rs./tonnes)} \]
\[ x_3 = \text{Area under HYV's (000'ha) and Gross irrigated area (000'ha)} \]
\[ b_0 = \text{Constant value} \]
\[ b_i \ (i = 1-4) = \text{Regression coefficients w.r.t } x_i \]

RESULTS AND DISCUSSION

Trends in production and consumption of fertilizer: The fertilizer production and consumption grew at an average growth rate of 10.67 per cent and 11.08 per cent respectively over the period under study (Table 1). The table indicates that both the production and consumption of fertilizers increased sufficiently but there was imbalance in the use of nitrogenous, phosphatic and potassic fertilizers which was responsible for not attaining the expected increase in productivity.

Factors affecting fertilizer consumption: The results of regression analysis carried out to examine the effect of some important factors like subsidy, price, area under high yielding varieties and gross irrigated area on fertilizer consumption are given in Table 2. The table shows that all the factors taken in to consideration had a positive and significant relationship with fertilizer consumption except the average price. The regression coefficient obtained with respect to subsidy turned out to be the highest depicting subsidy to be the most important factor affecting fertilizer consumption. Narayan (1985) and Rama Rao (1989) also reported subsidy as an indispensable factor influencing fertilizer consumption and utilization.
The area under high yielding varieties, was the next important factor and this might be attributed to the fertilizer responsiveness of HYV's. Though organic fertilizers are an important source of nutrients but their amount and available nutrient content and the release rate is inadequate for meeting the demand of high yielding varieties and this demand can be met only by using chemical fertilizers. These observations are in close agreement to those of Rao (1990) and Rout et al. (2002).

Similarly, the gross irrigated area showed a positive and significant relationship with fertilizer consumption. This was again because of the fact that higher the percentage of irrigated area, higher will be the area under HYV's demanding a higher use of fertilizers.

Average price showed unexpected sign. But as price is an important variable influencing fertilizer demand so it was retained in the equation. This unexpected behaviour of price might have appeared because of several reasons. One of the reasons may be that only time series data was considered for analysis. But over the period of time there are many other factors like income, educational level, knowledge, demonstration effect etc that influence demand besides price. The observations of Shah (1982) also supplement the present findings. Again with the introduction of HYV's and expansion of knowledge of improved technologies among cultivators, the fertilizer demand increased significantly and what ever the prices of fertilizer may be, the cultivators felt that it was an essential input to attain sustainable productivity, as well as to maintain the soil fertility level.

Fertilizers are key to success in meeting the challenge of food security in future by increasing productivity. Higher crop yield means greater removal of nutrients from the soil. As the soil is not an inexhaustible store of nutrients, they have to be supplied to facilitate the desired productivity. Hence the farmers should be encouraged for balanced use of fertilizers in different ways like educating them about fertilizer utility and providing subsidies etc. The irrigation potential also needs to be harnessed efficiently. There is a great need to
increase production of fertilizers in India through utilizing the full installed capacity of the existing production units and also by establishing the new ones.

REFERENCES