Dark Side of Green Revolution: Imbalance of Fertilizer Use Across Indian States and Its Impact on Biodiversity

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Backdrop:

Agriculture is the backbone of the Indian economy and fertilizer play a key role in agricultural prosperity. As the population increased rapidly and since the possibilities of increasing the net sown area were nearly exhausted the incremental output from agriculture had to come from a higher yield per unit area. Hence the green revolution saw an increase consumption of chemical fertilizers namely nitrogenous (N), phosphorus (P) and potash (K). One of the reasons for problems of soil salinity and alkalinity in agricultural regions of India is the indiscriminant and faulty use of fertilizers. There is a recommended level of fertilizer for each crop and soil, which is known as the optimum level. Fertilizer use above or below this level creates imbalence.which in turn causes environmental problems. In this paper an empirical analysis has been carried out to see the imbalance in fertilizer use. Thus this study becomes very vital for the growth of the Indian economy, which is based upon Indian agriculture.

Statement of the Problem:

Green revolution has brought serious ecological problems. Farmers are increasingly complaining of depleting fertility of soils, soil salinity and alkalinity and problems of ground water pollution. Apart from over irrigation this could also be due to inefficient use of fertilizers. However in the case of poor farmers they were being unable to apply the require dose of fertilizer. Any thing above or below the required level will create fertilizer imbalance.

Objectives:

1. To analyze the trends and patterns of fertilizer consumption across states in India and to see whether any imbalance exists.
2. To examine the impact of fertilizer consumption on polluting ground water and soil etc.

Methodology:

Due to limitations of data, the process of calculating fertilizer use imbalance has been re-formulated. The data on consumption of fertilizer is available at an aggregate level, but the information on the recommended levels of fertilizer use is available at only a disaggregate level. To make this data comparable the aggregated state level recommended levels have been computed for all the crops.imbalence is calculated as consumption level minus recommendation level as percent of recommendations. The analysis covered for the years 1991,1994,1997,2000.

Summary of Results:

Consumption of fertilizers in India had been rising over the years but declined in the year 2000.consumption and growth rate of N are the highest followed by P and K.because N is cheaper than those two and highly recommended. Consumption of all fertilizers is the highest in the southern states followed by the northern, western and eastern states. Consumption of P is the highest in the southern states followed by the northern, western and eastern states. K consumption is very high in the southern states followed by the eastern, western and the northern states.

Contrary to the consumption pattern, the growth rate of K are the highest followed by P and N.The growth rates of N, P, K as well as total fertilizers are the highest in the eastern states followed by the western, northern and southern states. At face value this may seem deceptive as the consumption figures for northern and southern states like Punjab, Haryana, Uttar Pradesh, Andhra Pradesh, Tamil Nadu etc are very high but then their growth rates are low because they already have high bases. It is just opposite for eastern states like Manipur and Nagaland which show high growth rates due to low bases.

The coefficient of variation of fertilizer use across 19 states is the least for n followed by p and K.Coefficient of variation for k is very high. This means that there is a greater stability in fertilizer use of n and p across states than k.

Conclusions/Policy implications:

Imbalance of fertilizer use is high in most states. The Northeastern states and even the green revolution states of Punjab and Haryana show sign for concern. Proper measures should be taken to reduce this imbalence.remeady should be brought about by closely following the recommended doses of fertilizer and also raising the efficiency of fertilizer use. This requires training of farmers in proper crop and farming practices and also stringent monitoring by the concerned authorities.