

# Fertilisers and the Revival of Agriculture

## CONCLUSIONS AND RECOMMENDATIONS

### CONCLUSIONS

1. The Tenth Five Year Plan witnessed a very slow growth of 1.8% in agriculture against the target of 4%. Sustainable growth in agriculture maintained until the late 1990s has witnessed deceleration in the recent years. The greatest challenge in Indian agriculture is to sustain the growth in productivity from the available land and water resources since the opportunities for expansion in area have been exhausted.
2. Deceleration in agriculture is attributed to a number of factors including technological inputs viz. HVs, fertilisers, agricultural practices, infrastructural development, particularly irrigation, policy interventions, etc.
3. The inadequate and imbalanced use of chemical fertilisers has led to a decline in soil health and its productivity. The partial factor productivity and response ratios have gone down, necessitating additional inputs to obtain the same level of crop yields.
4. Integrated Nutrient Management, which encompasses all the sources of plant nutrients, i.e., fertilisers, organic manures, bio-fertilisers, is the only solution for sustaining agricultural production and improving soil health.
5. Inadequate soil testing facilities, gaps in knowledge, inadequate extension/promotional efforts and non-conducive pricing policy are some of the major constraints in promoting balanced, efficient and integrated use of fertilisers.
6. The future growth of agriculture, among other things, depends on the use of fertilisers at the right time, of the right type and in the right quantities for which adequate availability of fertilisers would be essential.
7. The Tenth Plan period witnessed stagnation in production capacity

for fertilisers. It also witnessed, after several years, large scale imports of fertilisers and foodgrains (wheat) which significantly pushed up the international prices of these commodities.

8. The quantum of fertiliser subsidy has increased over the years due to rising cost of inputs on the one hand and stagnant retail prices of fertilisers for long periods to the farmers on the other, apart from increase in the quantity of fertilisers consumed. A balance has to be struck between the farm gate prices of fertilisers and the quantum of subsidy that the country can afford for food security and well-being of farmers.

9. Empirical analysis shows that a hike of 5% per annum in the farmgate prices of fertilisers is feasible and can be achieved with significant saving in fertiliser subsidy on the one hand, and enhancement of food-grain production on the other, without affecting the profitability of farmers if adequate measures are taken to improve fertiliser use efficiency which would call for knowledge intensive application of fertilisers and other inputs supported by an effective extension system.

10. The farmers need to be imparted better understanding about the integrated use of plant nutrients including secondary and micronutrients and their interaction with other inputs like variety of seeds, fertiliser dose (NPK combination), micronutrient deficiency and cultivating practices in a system of crop rotation.

11. The current thrust of the Government fertiliser policy is based on micro-management obsessed with reduction of subsidy by squeezing a beleaguered industry. What is lost sight of is the fact that the quantum of subsidy has increased due to stagnant MRP of fertilisers for long periods coupled with incessant increase in prices of

inputs, especially feedstocks for urea and imported raw materials/intermediates for P and K fertilisers and not an inefficient domestic industry. This has shifted almost the entire focus of fertiliser policy on reduction of subsidy. In the process, neither the industry has grown healthily nor has the farming community benefited.

12. The cost centric fertiliser policies of the Government have mopped up capital and operational efficiencies achieved by the industry over the years leaving hardly any surplus for investment in modernisation and expansion and have perhaps unintentionally marginalised the industry both in the capital markets and in its strategic content. The trend of some units becoming sick and ultimately closing down has already begun.

13. The fertiliser industry, once a core industry, has taken a back seat today despite a growing concern towards the growth of the farm sector and well-being of the farming community.

14. Even if there is an attractive policy for new and expansion units, it is not likely to attract investments because once the investments are made the policies have traditionally changed adversely for the industry time and again which deters cautious investors.

15. The demand for urea, DAP, NP/NPKs, SSP and MOP is estimated to increase from 24.3, 7.5, 7.4, 2.9 and 2.9 during 2006-07 to 28.8, 9.5, 9.3, 3.6 and 3.7 million tonnes, respectively, by the end of the Eleventh Five Year plan (2011-12). This would leave a supply-demand gap of about 1.8 million tonnes of nitrogen and 1.9 million tonnes of phosphate by 2011-12. The entire demand for potash will have to continue to be met through imports

16. Heavy investments in creation of additional domestic capacities

of fertilisers would be needed to bridge this gap which would not be forthcoming unless the policies are changed to allow reasonable returns on investment comparable to those available in other domestic industries.

**17.** Agriculture is facing a challenge with the industrial, domestic, power and other sectors in getting the rightful share of the finite water resources. It is projected that the share of water allocated to agriculture is likely to decrease by 10-15 % in the next 20-30 years.

**18.** The pressurised method of irrigation consisting of sprinklers and drip systems gives many advantages over the gravity flow surface irrigation methods in terms of water savings and yield. Supply of water soluble fertilisers through micro-irrigation like a drip system, even though costlier, leads to saving in fertilisers applied to the extent of 40-60% without affecting the yield and a much higher application efficiency compared to the conventional methods.

**19.** The rapid progress in information technology coupled with the rapid advancements made in Geographical Information System (GIS), simulation tools and remote sensing have opened up new vistas for water resources development and management.

**20.** Production capacity of urea is stagnating around 20 million tonnes for the last 8 years. Availability of natural gas and its pricing is a major constraint in expansion of the capacity. In spite of sincere efforts, several naphtha and fuel oil based plants are unable to change the feedstock to NG/LNG. At present, about 28 MMSCMD of natural gas including LNG is being supplied to the fertiliser sector. The projected requirement for production of about 28 million tonnes of urea would be 63 MMSCMD of natural gas by 2011-12. Supply of natural gas is likely to increase substantially by the year 2008.

**21.** There is an ample scope for increasing the capacity and reducing the energy consumption of Indian ammonia plants. There are a number of schemes available with a pay back period of 4/7 years which can help to increase the

capacity of some plants by about 25% and reduce the energy consumption by 5-10%. Some of these schemes have already been implemented in a few plants in the country.

**22.** Catalysts play an important role in the manufacture of ammonia. The new reforming catalyst developed by one of the catalyst manufacturers offers low pressure drop, higher activity, high crushing strength and higher resistance to coking. The proven catalyst offers an opportunity to improve the efficiency and/or improve the throughput of the ammonia plants.

**23.** Technologies are also available for improving the energy efficiency and reliability of urea plants. Modification in the steam system can save 70-80 tonnes of MP steam per tonne of urea. The new material for construction of stripper tubes offers reduction in corrosion and reduction in maintenance even with more harsh operating conditions.

**24.** The line of thought has to shift from just improving farm productivity to improving farm incomes that would really benefit the farmers.

**25.** Recent developments have created new opportunities for farmers to enhance their farm incomes in the form of agro retail, contract farming, bio-diesel, exploring opportunities of complementary income avenues (dairy farming, vermi compost, etc).

**26.** The concept of agro-retail stores (Hariyali Kisan Bazaars, etc.) are yet to break-even, however, the concept is catching up with the entry of big corporate houses. These stores are helping in creating awareness among the farmers and fertiliser dealers are forced to sell agri-inputs at acceptable or notified prices, thus indirectly benefiting the farmers.

**27.** Control on fertilizer movement and prices by the Government is not only increasing the burden on the Government and the fertiliser industry but also resulting in imbalanced use thereby affecting soil health. The fertiliser industry has been contributing to increase in farm productivity, but has to shoulder more responsibility in creating awareness on integrated nutrient management through deploying at least a small portion of their sales

promotion budgets towards this objective.

**28.** Based on the experience of various companies in corporate / contract farming it has been observed that corporate farming is a costly proposition vis-à-vis contract farming as farmers can do the job better and at a lower cost. Hence despite the inherent legal complications, the contract farming route is both cost-effective for the corporates and beneficial for the farmers.

## RECOMMENDATIONS

**1.** To ensure the country's food security on a sustainable basis the Government has to put in place a long-term transparent and workable policy which promotes dissemination of knowledge among farmers through effective extension services and attracts investments in agriculture, rural infrastructure and farm inputs including fertilisers.

**2.** Balanced, integrated and judicious use of fertilisers, including secondary and micronutrients based on soil test data and the conjunctive use of all sources of plant nutrients including biofertilisers, organic manures, etc, need to be propagated to sustain agricultural productivity and for restoring soil health.

**3.** Subsidy is a strong instrument in the hands of Government which should be used to promote balanced and efficient use of fertilisers. The existing pricing mechanism with inter nutrient and intra product disparities has to be made conducive for balanced fertilisation. The present product-based regime of subsidy must be replaced with a nutrient-based subsidy with further flexibility for new products fortified with secondary and micronutrients and which are crop and location specific.

**4.** The farmgate price for each unit of primary nutrients viz. N, P and K should, as far as possible, remain the same in all the fertiliser products irrespective of the product/technology involved.

**5.** Sulphur needs to be recognized as a critical nutrient at par with N, P, K for both price fixation and eligibility for subsidy. In fact, subsidy needs to

be extended to all secondary and micronutrients (whether applied as straight, mixtures or fortified product) to ensure their optimal use by the farmers for restoring soil health and improving productivity.

6. The focus of the fertiliser industry should shift from selling commodities (fertilisers) to providing solutions for promoting balanced and efficient use of nutrients and thereby increase agricultural productivity and net farm incomes.

7. The fertiliser industry should promote new farming practices along with their products to increase the reach of the farmers and create awareness among the farmers. This would be possible only when the industry is relieved of stringent controls and the time consuming formalities connected with subsidy and its delayed payments which engage a significant amount of time and resources of the industry besides increasing the cost of production and distribution.

8. The Government should find an alternative method for disbursement of subsidy and set the industry free to grow in a free and competitive environment and contribute to improve the farmers' life.

9. Government policy measures like promoting balanced use of nutrients, increase in investment in agriculture (research, education and infrastructure), enlarging procurement base, crop insurance, contract farming, credit facilities, use of biotechnological tools to develop high yielding quality varieties with resistance to biotic and abiotic stresses would be needed to break the yield barriers.

10. There is need to intensify the infusion of a right mix of technological inputs and removing those hindrances which relate to input supply, basic infrastructure and policy to increase agricultural productivity. Diversification of area under cereal crops with more profitable alternatives needs to be sought.

11. In addition to improving fertiliser use efficiency and maintaining supply of fertilisers, it would be essential to infuse and adopt precision in timely conduct of operations and all standard agronomic practices.

12. The adoption of proper methods of irrigation, conjunctive use of surface and ground water, effective surface and sub-surface drainage and use of modern techniques in irrigation water management are needed for on-farm water management for higher productivity and output from the existing water resources. Promotion of water saving devices and techniques should be an objective of the National Water Policy.

13. Modern irrigation techniques like sprinkler and drip systems should be promoted in areas where water is scarce, and the topographic and soil conditions do not permit efficient irrigation by conventional methods. Use of water soluble fertilisers through micro-irrigation systems like drip irrigation should be promoted by all the concerned for increasing water and fertiliser use efficiency.

14. The modern tools like GIS, remote sensing and simulation models should be used for development and management of water resources. These have immense use in designing proper irrigation methods, optimising water use, minimising water losses and increasing water use efficiency.

15. Appropriate research, administrative and policy back-up is needed to develop new, efficient / value added fertilisers including site specific customised products and also organic combinations.

16. There is need for a policy initiative both for allocation and pricing of natural gas for the fertiliser industry in order to ensure fertiliser and food security of the country. It is urgent in view of additional quantities of gas being available from the year 2008 and scarcity of fertiliser in the country necessitating costlier imports

17. In view of the recent developments in clean coal technologies including beneficiation, there is a need for an initiative to use coal for production of fertilisers.

18. There is an urgent need to increase the capacity of ammonia and urea plants to bridge the supply demand gap for urea in the country. The proposed revamp/retrofit measures should be implemented not only to increase the capacity

but also to improve the energy efficiency of both ammonia and urea plants

19. The developments in materials of construction and fabrication techniques should be taken advantage of to improve the reliability and reduce the maintenance cost of the plants

20. The ongoing efforts of various companies in agro-retailing should be directed at an integrated approach for value addition across the entire value chain and should not limit itself to only supplying agri-inputs under one roof.

21. The agro-retail concept should be backed by sound technical support and the organisations pursuing this potential growth area should deploy trained and highly motivated manpower to create awareness and address the concerns, if any, of the rural consumer.

22. The strong bond between the retail dealers and farmers should be leveraged in driving agriculture growth and farm incomes.

23. Crop insurance schemes offered by some insurance companies need to be popularised through extensive campaigns and encourage farmers to insure their crops enabling them to realise some income in case of crop failure.

24. Farmers should pursue supplementary sources of income to ensure a steady source of income - dairy farming, sheep rearing, vermi compost preparation, etc. are some of the alternatives.

25. Organisations pursuing / interested in taking up contract farming need to communicate with the farmers in the language they understand easily.

26. To instill confidence in the farmers so that they begin to respect the representatives of the company as experts in farming, a strong base in agronomy trained personnel has to be developed to advise the farmers.

27. With enormous diversity in geographic and demographic aspects of the farming community, organisations engaged in contract farming should make conscious efforts to understand and assess the ground realities before entering into a contract with farmers. ■