

# INTEGRATED NUTRIENT MANAGEMENT

India is the third largest producer and consumer of fertilizers in the world after China and the USA, and contributes about 11.4 and 11.9 per cent to the total world production/consumption of NPK nutrients respectively. However, in terms of consumption per hectare, the consumption in India (104.5 kg per hectare) is lower than neighbouring countries, showing scope of further increase.

7.2 The consumption of chemical fertilizers in India by and large was stagnant from 2001-02 to 2003-04. However, it has increased during the last two years; consumption during 2005-06 was 203.40 lakh metric tonnes (LMT) of NPK nutrients which is the highest ever achieved. The consumption during the last few years is indicated below:

*Consumption of fertilizers (in lakh tonnes)*

Year	Urea	DAP	MOP	N	P	K	N+P+K	Kg/ha
1999-2000	202.78	69.37	20.49	115.92	47.99	16.78	180.69	94.94
2000-01	191.86	58.84	18.29	109.20	42.15	15.67	167.02	89.63
2001-02	199.17	61.81	19.93	113.10	43.82	16.67	173.60	91.13
2002-03	184.93	54.73	19.12	104.74	40.19	16.01	160.94	91.45
2003-04	197.67	56.24	18.41	110.77	41.24	15.98	167.99	88.05
2004-05	206.65	62.56	24.06	117.13	46.24	20.61	183.98	94.52
2005-06	222.97	67.64	27.31	127.23	52.04	24.13	203.40	104.50

7.3 The consumption of fertilizers during Kharif 2006 is estimated to be 100.10 LMT of NPK nutrients, which constitutes an increase of approximately 9 per cent over Kharif 2005. The consumption during 2006-07 (both Kharif and Rabi) is likely to be more than 220 LMT. However, the fertilizer consumption in India is very skewed with wide inter-state, inter-district and inter-crop variations, though the NPK ratio, which is an indicator of balanced use of chemical fertilizers, has improved to 5.3:2.2:1 during 2005-06, against 5.7:2.2:1 during the preceding year.

7.4 To ensure the adequate availability of fertilizers to farmers, the Department of Agriculture and Cooperation makes a demand assessment well in advance through half-yearly input zonal conferences in consultation with the State Governments and the fertilizer industry. Thereafter, the Essential Commodities Act (ECA) Supply Plan and orders are issued under the Fertilizer Movement Control Order for indigenous and imported urea by the Department of Fertilizers to ensure its timely availability.

7.5 **Fertilizer Prices:** All chemical fertilizers except urea continued to be decontrolled. The Government of India continues to provide a subsidy to the manufacturers of urea to enable its availability to farmers at reasonable prices. Further, in order to make available decontrolled Phosphatic (P) and Potassic (K) fertilizers at

reasonable prices, the government has been implementing a scheme of concession on sales of these fertilizers. There was no increase in the price of major fertilizers and the prices of urea and other fertilizers remained at the same level as of 2003-04. The fertilizers during the year under report are as under:

S.No.	Product	Rs per tonne
1.	Urea	4830
2.	Di-Ammonium Phosphate (DAP)	9350
3.	Muriate of Potash (MoP)	4455
4.	Single Super Phosphate (SSP)	Prices fixed by the State Governments vary from 2600-4612
5.	Complex Fertilizers	6980-9080

**7.6 Buffering Stocking of P and K Fertilizers:** To ensure the adequate availability of decontrolled fertilizers in remote and inaccessible areas, a buffer stock of limited quantities of DAP and MOP is being maintained at strategic locations to meet the emergent requirements of states.

**7.7 Promotion of Integrated Nutrient Management (INM):** Some major initiatives that have been taken to promote the balanced and integrated use of fertilizers are enumerated below:

**7.8** The Government is promoting the soil test-based balanced and judicious use of chemical fertilizers, bio-fertilizers and locally available organic manures like farmyard manure, compost, nadep compost, vermi compost, green manure and press mud etc., to maintain soil health and its productivity. The Centrally Sponsored Scheme on Balanced and Integrated Use of Fertilizers, since subsumed under the Macro Management of Agriculture Scheme, provides for the promotion of soil test-based application of chemical fertilizers, strengthening of soil testing facilities in the country and setting up of compost plants for conversion of biodegradable city waste into organic manure.

**7.9** At present, there are 609 soil-testing laboratories in India. These include 487 static and 122 mobile laboratories under the State Governments and the fertilizer industry with an annual analysing capacity of 6.7 million soil samples. Under the scheme, soil health cards are being issued by the State Governments to the farmers for advising them on the use of correct and balanced use of fertilizers for maximum efficiency and profitability.

**7.10 Status of Fertilizer Quality Control:** To ensure the adequate availability of fertilizers of a standard quality to farmers, fertilizers were declared as an essential commodity; and the Fertilizer Control Order (FCO), 1985, was promulgated under Section 3 of the ECA to regulate the trade, price, quality and distribution of fertilizers in India. The FCO has been recently amended to make it more user-friendly and amenable to effective enforcement. For the first time, bio-fertilizers and organic manures have also been brought under the regulatory mechanism. In Schedule III and IV of the FCO

the specifications of four important bio-fertilizers and three organic manures have been notified to ensure the adequate availability of fertilizers of standard quality to farmers.

7.11 The enforcement of this order has primarily been entrusted to State Governments. The Central Government provides training facilities and technical guidance to states and supplements their efforts through random inspection of manufacturing units and their distribution network through inspectors. At present, there are 67 laboratories in India (including four Central Government laboratories), with a total annual fertilizer capacity of 1.22 lakh samples. The analytical capacity and the number of samples analysed and found to be non-standard during the last five years are as under:

Year	No. of labs	Annual analytical capacity	No. of samples analysed	% Non-standard samples
2001-02	65	119415	108425	5.8
2002-03	67	125480	109504	5.4
2003-04	67	124778	104647	5.5
2004-05	67	124730	108859	6.0
2005-06	67	122488	111745	6.0
2006-07 (up to 30 September 2006)	67	122500	31749*	4.3

\*Information awaited from some states.

7.12 **The Central Fertilizer Quality Control & Training Institute (CFQC&TI or the Institute), Faridabad:** The major functions of the CFQC&TI and its three Regional Fertilizer Control Laboratories (RFCLs) located at Navi Mumbai, Chennai and Kalyani include drawal, inspection and analysis of both indigenous and imported fertilizers; training of state enforcement officers and analysts including officers from developing countries; development of methods of analysis; and acting as a referee laboratory besides an advisory body on the issues relating to fertilizer quality control. The activities undertaken during the year under report are briefly indicated below:

7.13 The CFQC&TI and RFCLs analysed 14189 samples against the target of 8500 during 2005-06 (showing an achievement of 166.9 per cent over the target), out of which 402 samples were found to be non-standard. During 2006-07 (till 31 December 2006), a further 11004 samples were analysed, out of which 261 samples were found to be non-standard.

7.14 During 2005-06, 517 ships were inspected, out of which seven containers of 100 per cent water soluble NPK and one urea ship were found to be non-standard. The Institute/RFCLs' inspectors inspected 490 ships and containers, of which six containers of NPK (100 per cent water soluble) were found to be non-standard in nutrient form during 2006-07 (up to 31 December 2006).

7.15 The central teams, during a random inspection of manufacturing units and dealers' premises, collected 120 samples during 2005-06, of which 29.2 per cent samples were found to be non-standard. During 2006-07 (up to 31 December 2006), 87 samples were drawn, of which 35 per cent samples were found to be non-standard.

7.16 During 2006-07 (up to 31 December 2006), 38 training programmes for fertilizer inspectors/analysts were organized. In addition, one exclusive training programme for foreign participants (in which 20 officers from 15 countries participated) was held.

7.17 **Training Programme for North-Eastern States:** One refresher training course of two weeks' duration was organized in September 2006, exclusively for the benefit of enforcement officers of the North-Eastern states at RFCL, Kalyani. In addition, one two-day orientation training programme was organized in Assam in December 2006; and two dealers' programmes were also organized.

7.18 **National Seminar on Fertilizer Quality Control:** The Institute organized a National Seminar on Fertilizer Quality Control on the 11 and 12 April 2005, at Faridabad. About 250 participants, mainly from the State Governments, ICAR, SAUs, the fertilizer industry, importers/surveyors and fertilizer testing laboratories, attended the seminar. After in-depth discussions, the plenary session unanimously adopted 20 recommendations on fertilizer quality control. Most of the recommendations have since been accepted by the Central Government.

7.19 **National Project on Organic Farming:** This scheme was initiated as a pilot project in October 2004 for the production, promotion, certification and market development of organic farming in India, with an outlay of Rs 57.05 crore. The project was introduced by subsuming the existing infrastructure of the National Bio-fertilizer Development Centre, Ghaziabad, and its six regional centers, located at Hissar, Jabalpur, Bangalore, Nagpur, Bhubaneswar and Imphal.

7.20 During the period 2006-07 (up to 31 December 2006), funds were provided for conducting 78 programmes for capacity building; 10 programmes on certification and inspection; 27 programmes on production and quality control of organic inputs; 79 programmes for the benefit of field functionaries (extension officers; and 219 training courses for farmers. In addition, as a part of the project, 68 model organic farms; 1093 field demonstrations on organic inputs; and 145 field demonstrations on enriched biogas slurry were sanctioned. Also, during the year under report (till 31 October 2006), 1014 samples of different organic inputs were analysed of which 23 of the samples were found to be sub-standard.

7.21 **Programmes in North-Eastern States:** The details of programmes under implementation in the North-Eastern states are given in **Annexure – 7.1**.