

Fertilizer scenario

Agrochemicals UGE 222

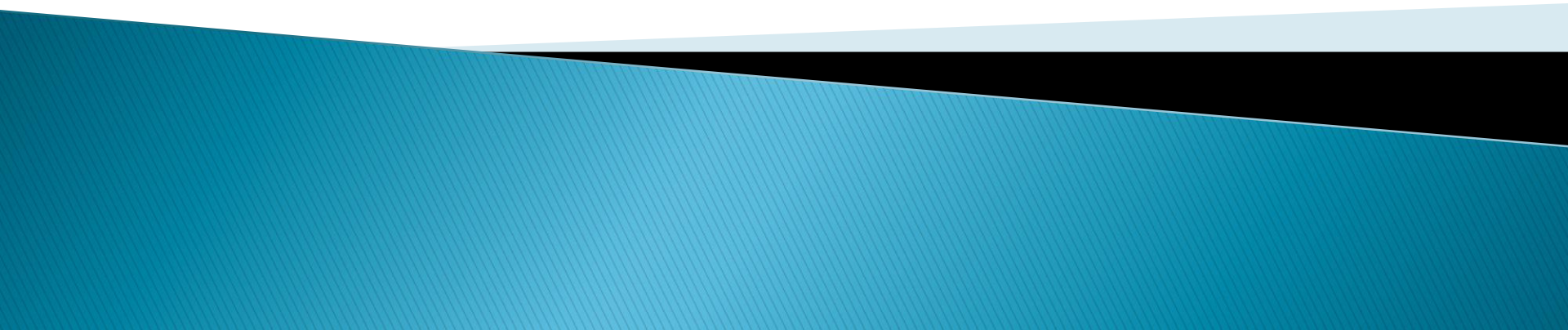
Instructor
Dr. A. K. Sachan
Professor



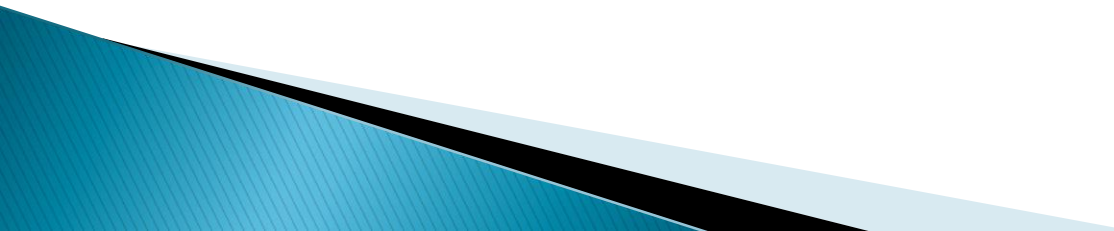
Presented By
Dr. Anurag Dhankar
Teaching Associate

Department of Soil Science and Agricultural Chemistry C.S.A
UNIVERSITY OF AGRICULTURE AND TECHNOLOGY
KANPUR(U.P.) 208002

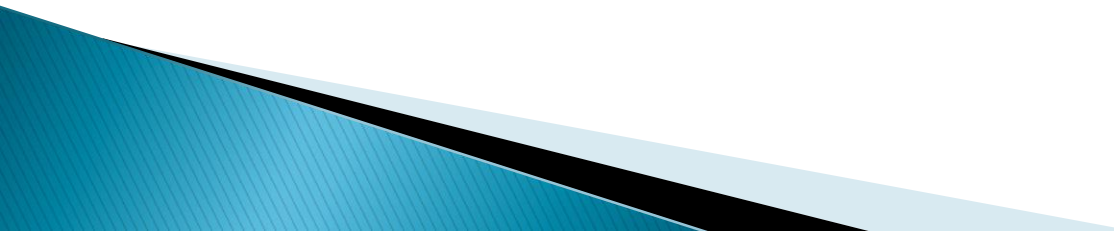
**Fertilizer scenario(production,
consumption, export, import) in world
and India**



Introduction

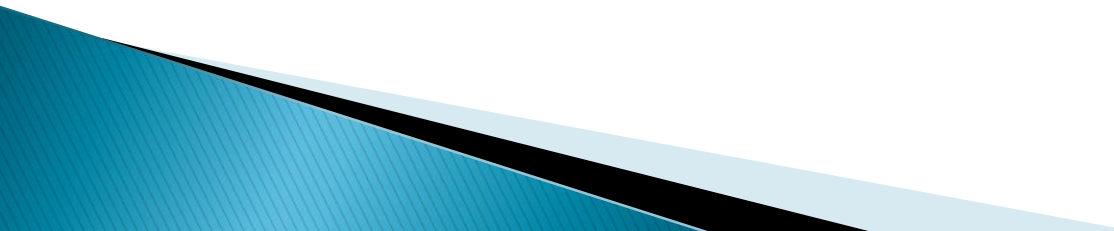
- ▶ Essential element- Organic or inorganic chemical compounds
 - ▶ Primary nutrient elements (N,P,K) that supply nutrient to plant to increase crop production.
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India present fertilizer policy scenario

- ▶ Urea under fully controlled environment:
 - ▶ Phosphatics: partially decontrolled but state-wise MRPs and allocation is fixed by the Central Government
 - ▶ Result: Huge difference between international prices of fertilizers and prices to Indian Farmers, and huge wastage of inputs
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- ▶ Subsidy: 2008-09 we have spent 1 lakh crore on fertilizer subsidy and nevertheless this year also we will be spending at least half of that
- ▶ It will have an adverse impact on the long run
Discussions are on for a nutrient based subsidy system

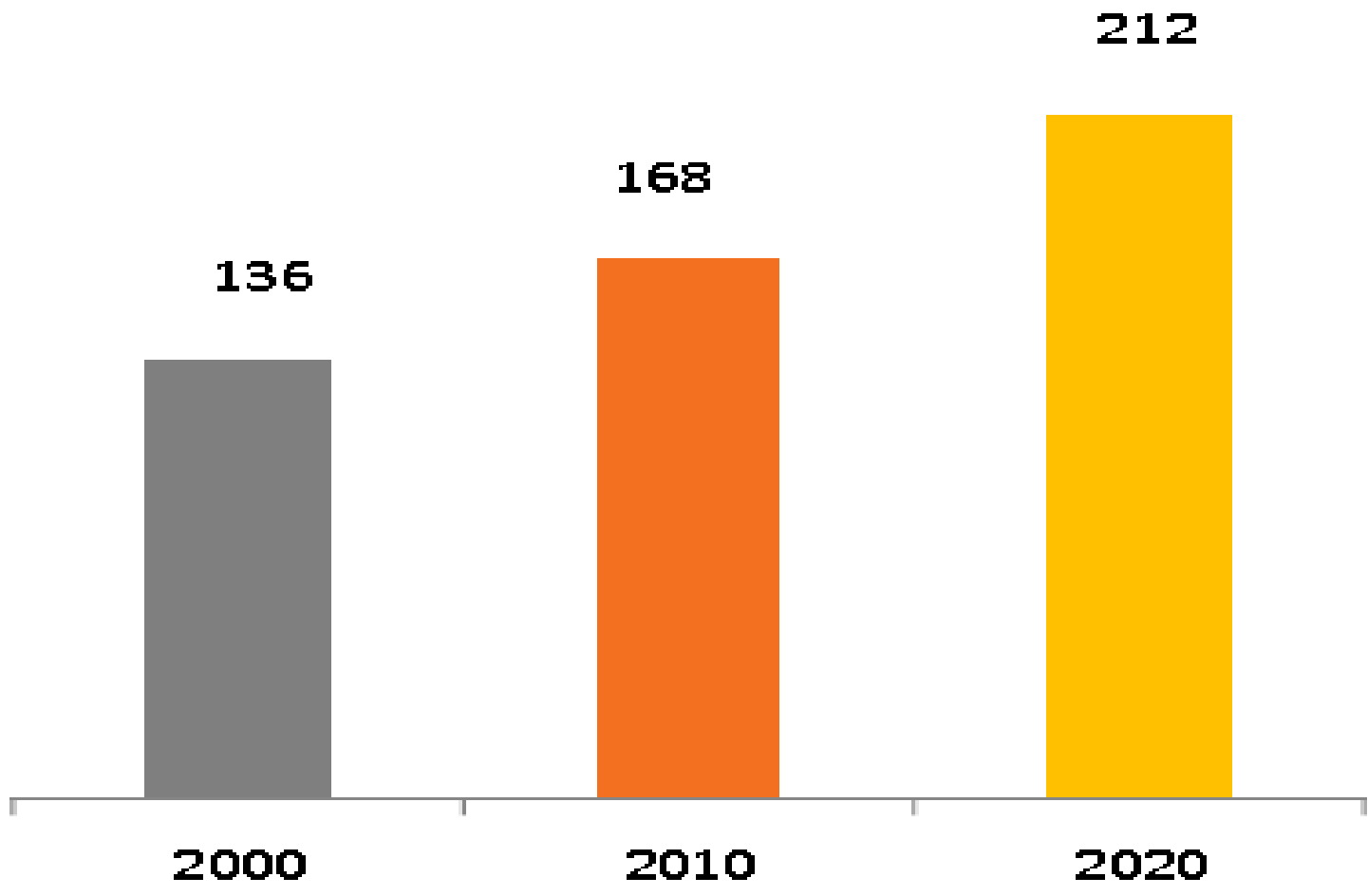
Global megatrends

- ▶ Rising Food Demand
 - ▶ Limited Resources
 - ▶ High Volatility in Food Prices
 - ▶ Innovation to Drive Productivity
 - ▶ Increase Value Chain Coordination
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DEMAND

- ▶ World fertilizer consumption is expected to rise well over 2 percent/year between 2008 and 2012 , equivalent to an increment 19.3 million fertilizer nutrient tonnes.

Global Fertiliser Demand (Million Mt)



Global Fertiliser Industry:

- Consumption is growing at 2.0 - 2.2% p.a.
- World nutrient production increased by 11% in 2009 and sales by 13% mainly due to potash sales
- India and China account for 40% of global consumption

Bulk availability of nutrient fertilisers is concentrated in certain regions

- 'N' nutrient in Middle East, USA & FSU
- 'P' nutrient in North/West Africa, USA & Jordan
- 'K' nutrient in Canada, FSU & Middle East

PRODUCTION

Production of fertilizer in India

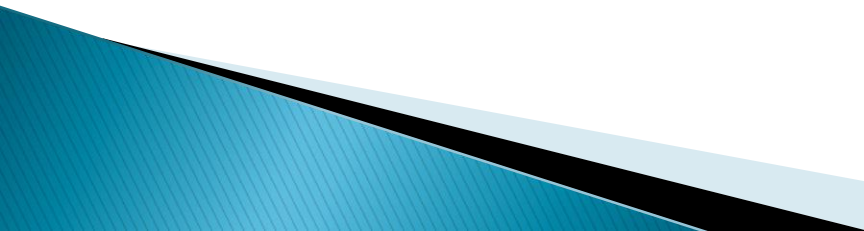
- ▶ India is the fourth largest producer as well as consumer of fertilizer in the world.
 - ▶ With population growing at a fast rate, food production was given highest priority in India since the 1960s (New Agricultural Strategy).
 - ▶ Growth in chemical fertilizer production and consumption therefore presents the single largest contributor to agricultural progress, its technological transformation and commercialization.
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Table 2.2: Production of Fertilizer by Products**('000 tonnes)**

Year	1987- 88	1988- 89	1989- 90	1990- 91	1991- 92	1992- 93	1993- 94	1994- 95
Nitrogenous Fertilizers	5,467	6,712	6,747	6,993	7,302	7,431	7,231	7,944
Straight Nitrogenous Fertilizer:	4,764	5,729	5,991	6,148	6,156	6,321	6,376	6,801
<i>Ammonium Sulfate (20.6% N)</i>	539	610	586	558	553	563	620	585
<i>Urea (46% N)</i>	9,835	11,867	12,486	12,836	12,832	13,126	13,150	14,137
<i>Calcium Ammonium Nitrate (25% N)</i>	421	480	425	436	446	546	666	572
<i>Ammonium Chloride (25% N)</i>	87	97	80	79	112	122	131	137

Nitrogenous Fertilizer through NP/NPK	703	984	757	845	1,145	1,110	855	1,144
Phosphatic Fertilizers	1,666	2,253	1,795	2,051	2,562	2,321	1,874	2,557
Straight Phosphatic Fertilizer:	398	471	502	584	478	373	361	484
<i>Single Super Phosphate (16% P₂O₅)</i>	<i>397</i>	<i>471</i>	<i>502</i>	<i>584</i>	<i>478</i>	<i>373</i>	<i>361</i>	<i>484</i>
Phosphatic Fertilizer through NP/NPK	1,268	1,781	1,293	1,467	2,084	1,948	1,513	2,073

Source: Center for Monitoring the Indian Economy (1996).

Table-1 Capacity and Production of N and P Fertilizers in India (000 tons)

Year	Capacity		Production	
	N	P	N	P
1995-96	8,998	2,924	8,769	2,593
1996-97	9,332	2,948	8,593	2,578
1997-98	9,987	3,165	10,083	3,058
1998-99	10,571	3,206	10,477	3,181
1999-2000	11,068	3,748	10,873	3,407
2000-2001	11,068	3,748	11,004	3,748

Table 2.4: Fertilizer Production, Capacity and Capacity Utilization by Sector (1991) (million tonnes of nutrients)

	Production	Capacity	Capacity Utilization
Nitrogen (N)	7.30	8.21	89.0%
Share in N:			
Public Sector	41.4%	52.9%	69.6%
Private Sector	35.1%	28.5%	109.4%
Coop. Sector	23.7%	18.6%	113.1%
Phosphate (P)	2.56	2.77	92.4%
Share in P:			
Public Sector	28.5%	28.9%	91.3%
Private Sector	57.8%	59.9%	89.2%
Coop. Sector	13.7%	11.2%	112.9%
Total	9.86	10.98	89.8%
Share in Total:			
Public Sector	38.0%	46.8%	73.0%
Private Sector	41.0%	36.4%	101.0%
Coop. Sector	21.1%	16.8%	113.0%
Source: Mittal (1994).			



INDIAN AGRICULTURAL PRODUCTION

Crops	% Share	World Rank
Wheat	11.4	2nd
Rice	21.6	2nd
Total Pulses	23.3	1st
Groundnut	10.4	3rd
Rapeseed	16.3	3rd
Vegetables	9.1	2nd
Fruits	8.4	2nd
Potatoes	7.6	3rd
Onion (Dry)	9.7	2nd
Sugarcane	20.2	2nd
Tea	24.4	2nd
Coffee	3.4	6th
Jute	65.6	1st
Cotton (Lint)	14.3	3rd

Product	Actual Production ('000'MT)					
	March,2001			April,2000-March,2001		
	Qty	N	P	Qty	N	P
UREA	1391.2	640.0	0.0	19650.9	9039.4	0.0
A/S	43.6	9.2	0.0	597.8	125.5	0.0
CAN	19.7	4.9	0.0	245.4	61.4	0.0
A/C	8.6	2.2	0.0	102.3	25.6	0.0
DAP	342.6	61.7	157.6	4888.9	880.0	2248.9
20:20	188.1	37.6	37.6	1555.5	311.1	311.1
SSP	228.9	0.0	36.6	2762.3	0.0	442.0
15:15:15	14.8	2.2	2.2	300.2	45.0	45.0
20:8:20:8	20.2	4.2	4.2	251.9	52.4	52.4
17:17:17	59.3	10.1	10.1	622.8	105.9	105.9
10:26:26	9.8	1.0	2.5	517.8	51.8	134.6
12:32:16	0.0	0.0	0.0	493.5	59.2	157.9
14:35:14	14.8	2.1	5.2	150.7	21.1	52.7
14:28:14	0.0	0.0	0.0	15.0	2.1	4.2
19:19:19	19.0	3.6	3.6	252.7	48.0	48.0
28:28	1.0	0.3	0.3	241.6	67.6	67.6
23:23	14.9	3.4	3.4	144.3	33.2	33.2
16:20	13.9	2.2	2.8	198.1	31.7	39.6
TOTAL	2390.4	784.6	266.2	32991.7	10961.0	3743.2

CONSUMPTION

- ▶ Urea and dap are the most popular fertilizers, accounting for 57.0 and 15.5 percent respectively, of the total fertilizer material consumed in the country.
- ▶ The per hectare consumption of fertilizer nutrients in India around 100 kg/ha which is low almost $\frac{1}{4}$ – $\frac{1}{3}$ to of other land, Korea, Japan and Belgium.

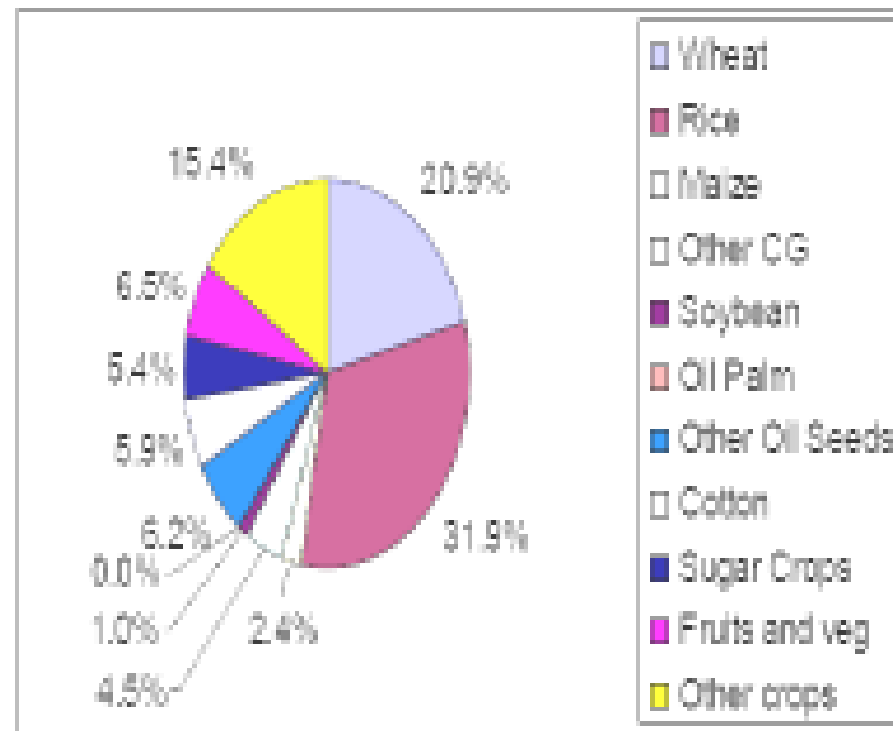
Table 2.7: Fertilizer Consumption, Imports and Subsidies

Year	Consumption (million tonnes)	Imports ^a (million tonnes)	Subsidies (Rs. million)
1970-71	2.26	0.63	na
1980-81	5.52	2.76	5,050
1990-91	12.55	2.76 (1.33)	43,890
1991-92	12.73	2.77 (1.24)	48,000
1992-93	12.16	2.98 (0.86)	57,960
1993-94	12.37	3.17 (1.28)	43,990
1994-95	13.83	3.12	52,410
1995-96	na	na	62,350
1996-97	na	na	60,930

Source: Center for Monitoring the Indian Economy (1996).

^aNumbers in parentheses give import (consumption) of potassic fertilizer; na – not applicable.

Crop wise fertilisers consumption in India



Source: International Fertilizer Industry Association estimates

Today our major consumption is on paddy and wheat
Which will be hit posing a major threat to food security

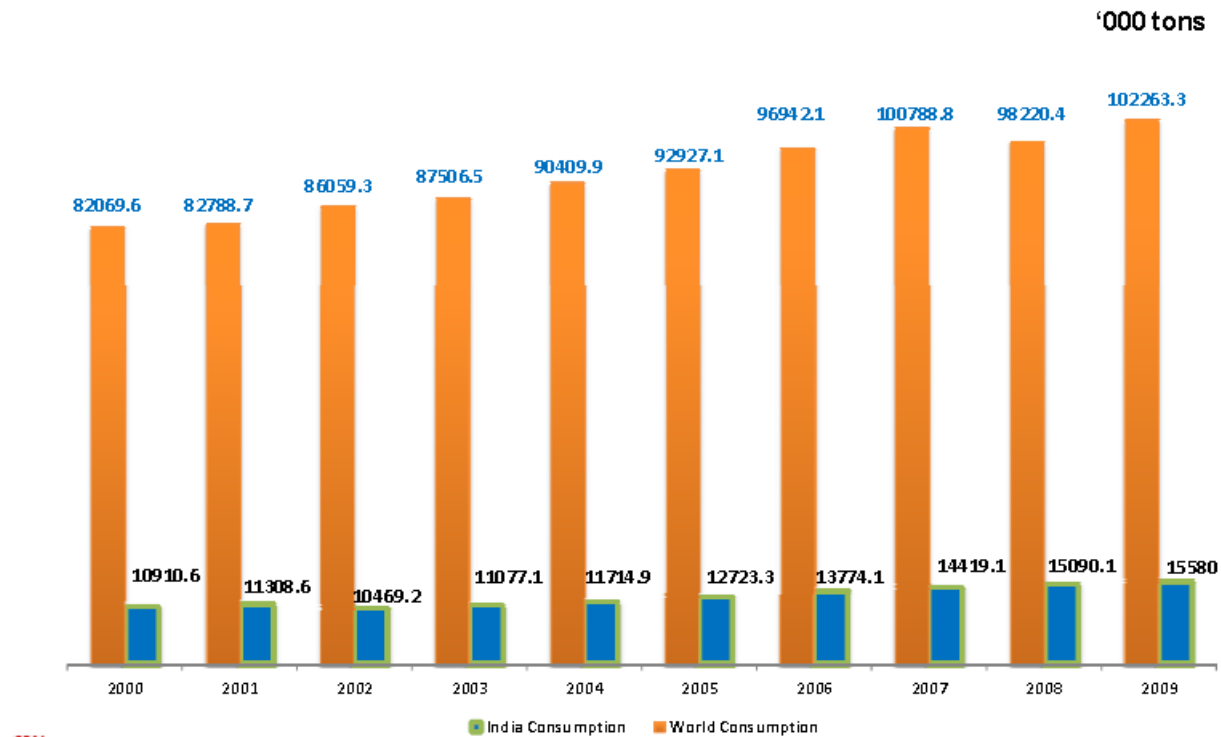
Fertilizer Consumption : Product-wise/Nutrient-wise

State : Tamil Nadu

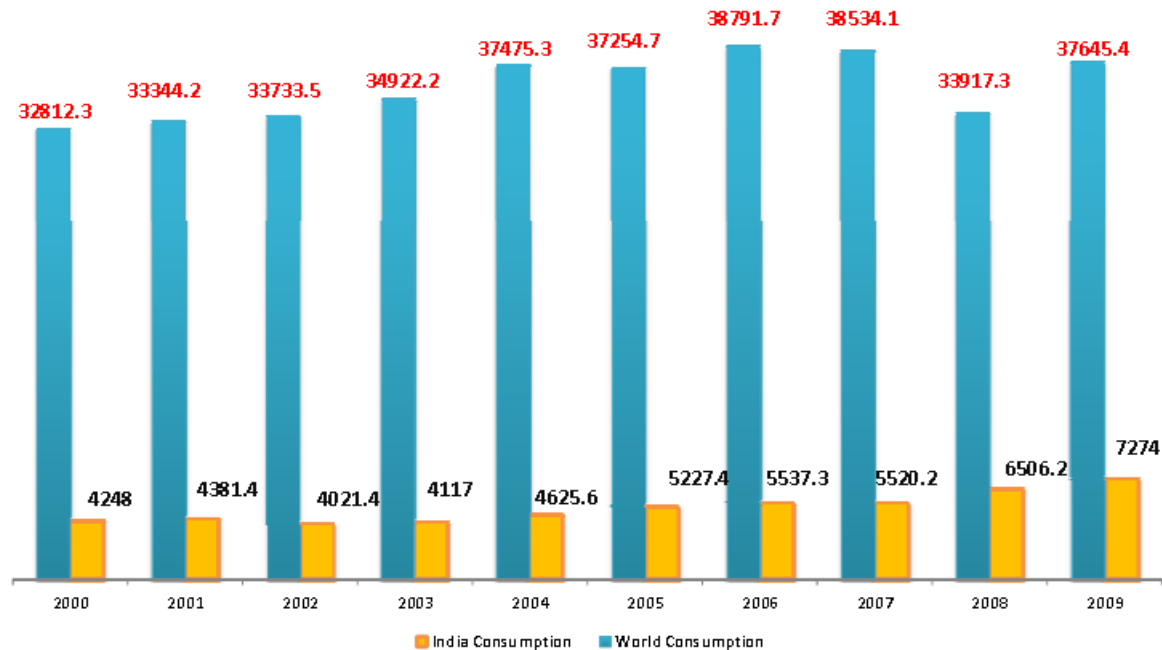
Unit: ('000'Tonnes)

Product/ Nutrients	1996-97			1997-98			1998-99			1999-2000 (Provisional)		
	Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Total	Kharif	Rabi	Total
In Terms of Fertilizer Material												
Urea	313.69	489.81	803.50	326.25	490.61	816.86	333.77	487.32	821.09	352.89	535.04	887.93
A/S	27.23	35.70	62.93	28.35	35.47	63.82	24.43	25.81	50.24	32.56	43.30	75.86
A/C	14.45	30.90	45.35	16.65	33.76	50.41	16.77	33.28	50.05	20.30	35.34	55.64
CAN	1.85	9.24	11.09	2.91	6.82	9.73	5.41	9.11	14.52	5.84	2.81	8.65
SSP	30.63	51.16	81.79	49.54	52.20	101.74	39.18	54.98	94.16	44.56	53.29	97.85
MOP	99.43	103.14	202.57	178.49	166.91	345.40	99.40	214.63	314.03	150.87	238.83	389.70
SOP	-	-	-	-	-	-	0.15	0.07	0.22	0.04	0.03	0.07

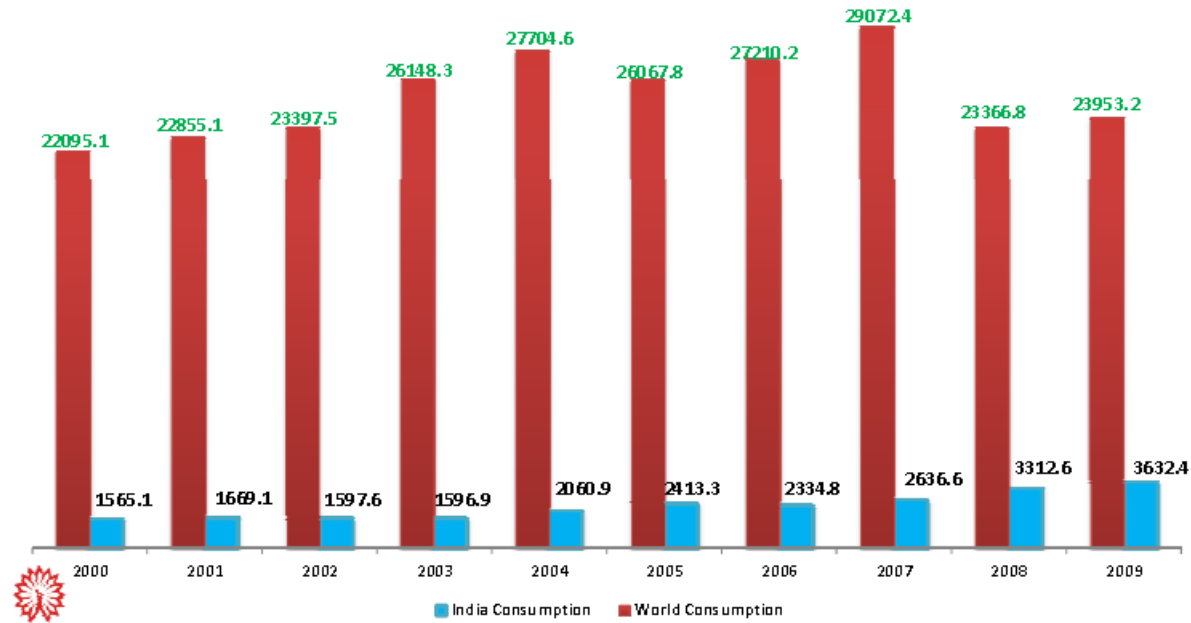
India consumption ~ 15 % of global Nitrogen



India consumption ~ 19 % of global Phosphate



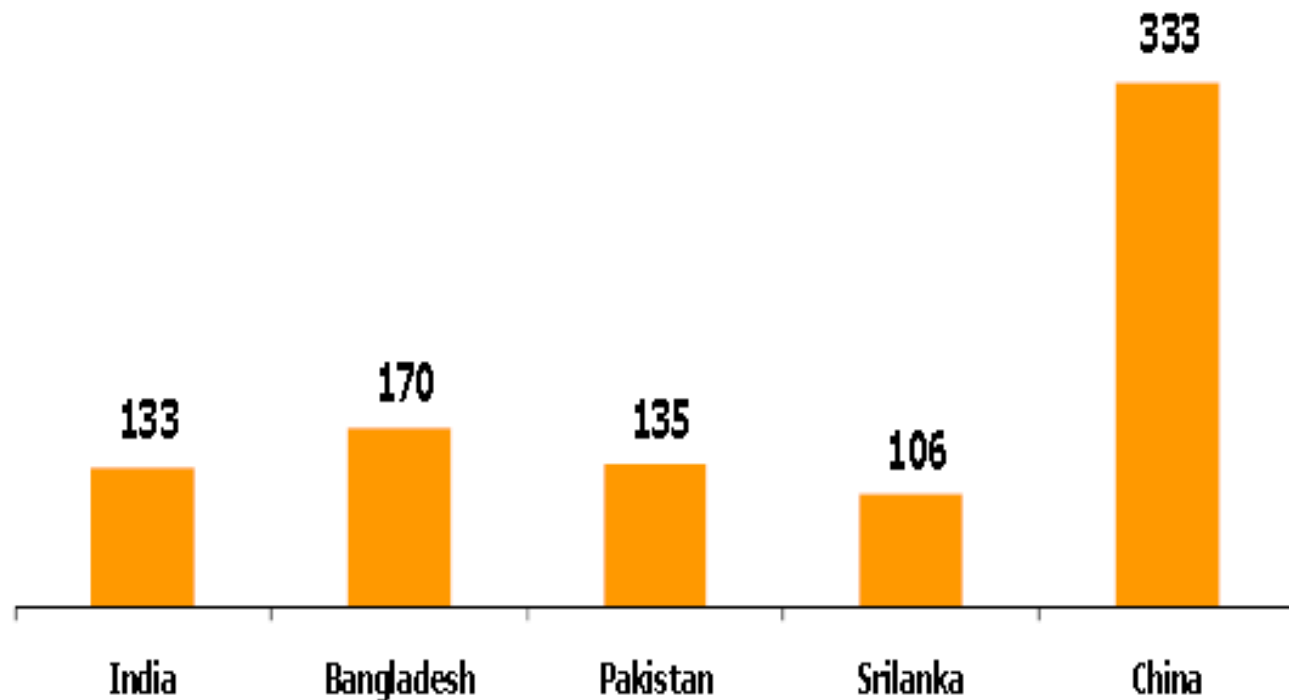
India consumption ~ 15 % of global Potash



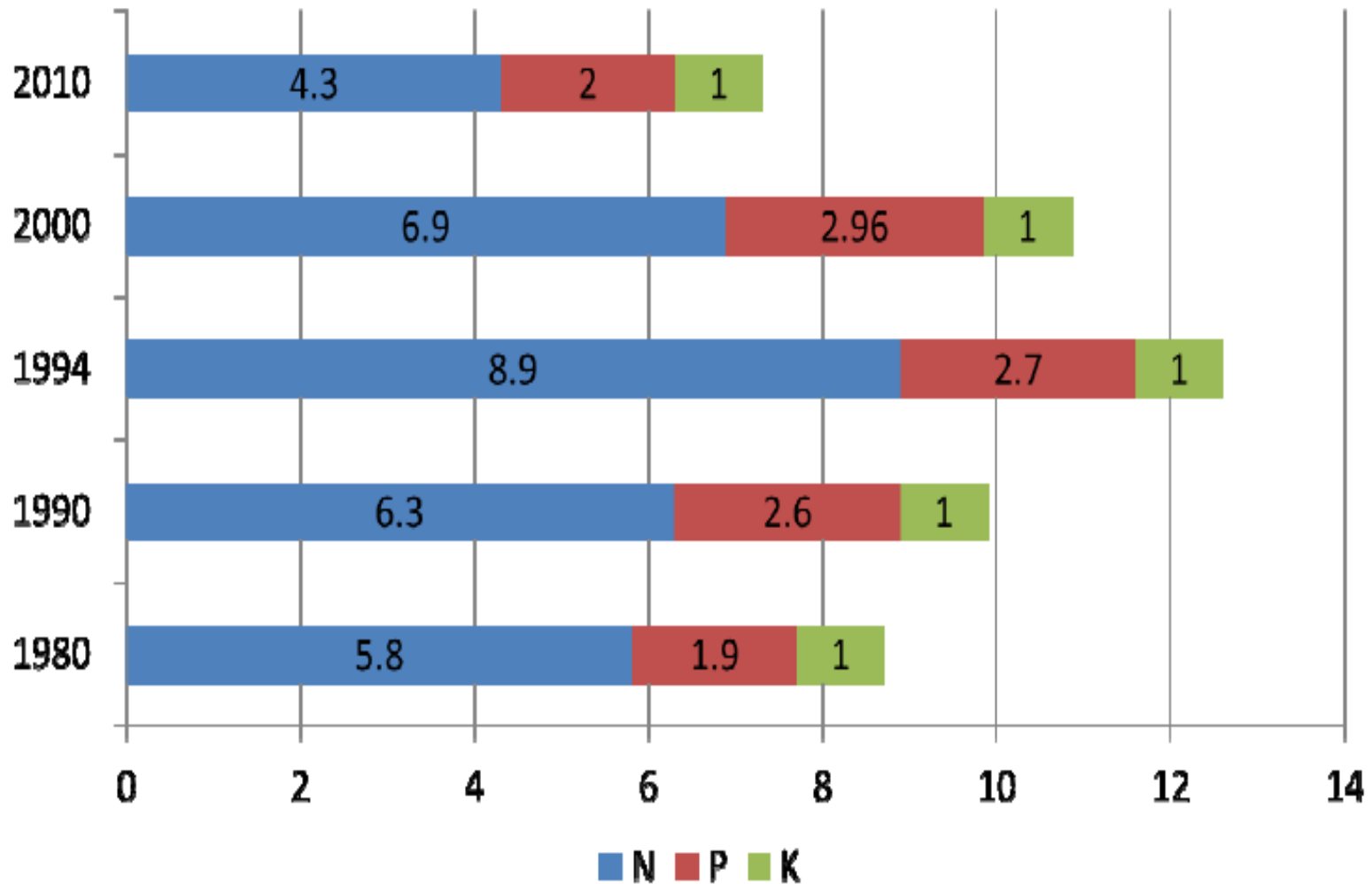
India's Nutrient Consumption is low

Kg/Ha

Nutrient Consumption among the Asian Countries

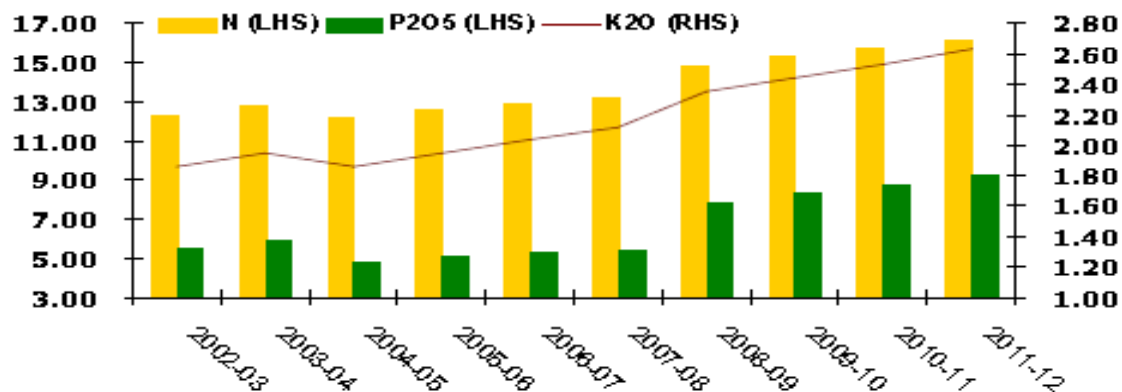


N P K Consumption Balance (Ratio) – An improving Trend



India's Fertilizer Outlook

India's NPK Demand (Million Mt)



Nutrient Demand growth rate:

- N ~ 3%
- P ~ 6%
- K ~ 5%

Fertilizer Consumption Demand Driver:

- Irrigation
- High Yielding Seeds & Crop Diversification
- MSP/ Agri Commodity Prices



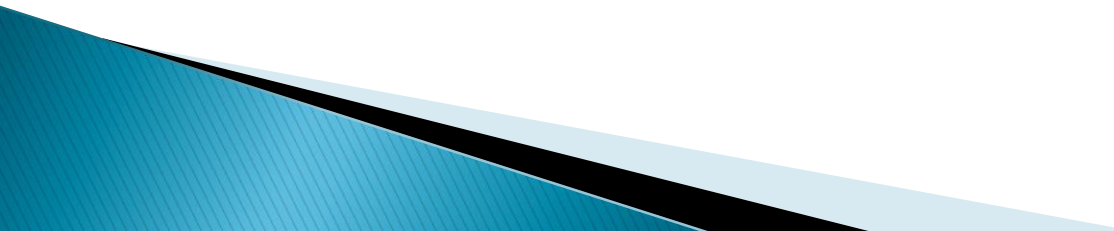
consumption growth rate, 2008–2012

	N	P ₂ O ₅	K ₂ O
Africa	4.5%	3.1%	2.0%
America	1.3%	3.7%	2.3%
Asia	3.1%	2.8%	3.8%
Europe	0.4%	-0.2%	-0.1%
World	2.6%	2.8%	2.7%

Emerging Scenario

- India a Growing fertilizer market for the world
- Subsidy system fast reforming
- Market will align to global market & development
- Growing role of Imports
- Use of micronutrients will increase due to crop diversification and balanced Nutrition
- Nutrient use efficiency will be a major concern
 - Soil & crop specific Fertigation
 - Integrated approach to nutrition
 - Soil health correction
- Last mile delivery Infrastructure & Information dissemination will be the key to Agricultural production in future.

imports of fertilizers

- ▶ Imports of urea has declined substantially during the past five years
 - ▶ There has been no imports of urea during 2000–01. Already
 - ▶ there is a huge stock of urea, around 2.5 million tons as on march 31, 2001.
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Imports of Fertilizers

Table- 3 Imports of Fertilizers : 1995-96 - 1999-2000 (000 tons)

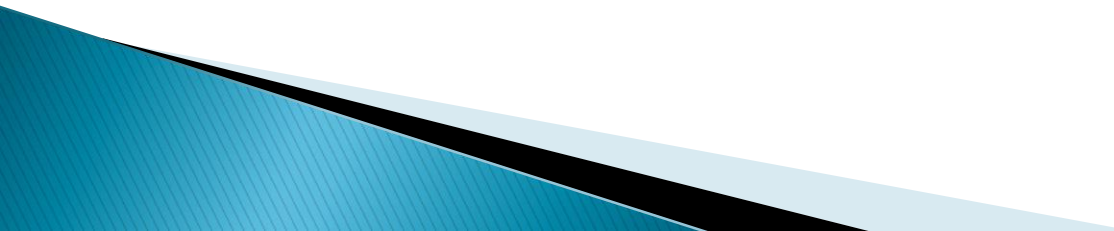
Year	Urea	DAP	MOP
1995-96	3,782	1,475	2,356
1996-97	2,328	475	110
1997-98	2,389	1,536	2,380
1998-99	556	2,091	2,579
1999-2000	533	3,268	2,946
2000-2001	68	844	2,450

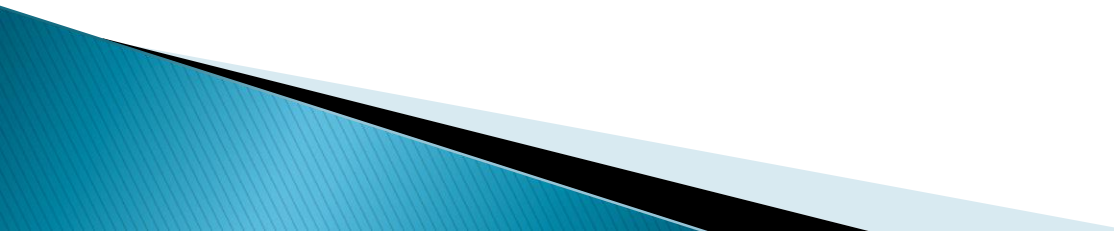
S.No.	Country	1994-95	1995-96	1996-97	1997-98	1998-99
1	Bangladesh	0.87	1.35	1.44	0.26	-
2	Bulgaria	0.21	0.73	-	-	-
3	Croatia	-	1.07	-	-	-
4	CIS	11.29	12.79	6.84	9.56	1.92
5	Germany	-	0.42	-	0.29	-
6	Indonesia	1.02	1.36	-	0.35	-
7	Kuwait	3.07	2.64	3.86	3.94	0.49
8	Libya	2.00	3.70	2.14	0.81	-
9	Pakistan	-	0.48	-	-	-
10	Qatar	2.80	2.37	2.95	3.01	1.03
11	Romania	0.99	3.56	1.60	1.36	-
12	Saudi Arabia	4.23	4.92	2.98	2.15	0.26
13	UAE	2.22	2.43	1.47	2.12	0.36
14	Iran	-	-	-	-	1.50
	Total:	28.70	37.82	23.28	23.85	5.56

Future implications

- ▶ India has become third largest country with a total capacity of 11.07 million tons of N and 3.760 million tons of P_2O_5 in year 2000–2001.
- ▶ All India capacity utilization has gradually improved over the years and was maintained at almost cent per cent level for N

conclusions

- ▶ Government is contemplating complete decontrol in phased manner by 2006-07.
 - ▶ Quantitative restrictions on fertilizer imports have been removed since April 1, 2001.
 - ▶ The implications of present policy environment for fertilizer sector in India is not promising. There are possibilities that domestic production and consumption of fertilizers may decline.
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- ▶ - The policy considerations which are likely to be implemented may result in making the domestic production of fertilizers unviable.
 - ▶ - At present there is no demand-supply gap in urea.
 - ▶ - High energy cost do not permit further expansion in urea capacity within the country, joint ventures abroad are likely to be developed.
 - ▶ - For phosphate/potash also, joint ventures abroad are likely to be developed as there is no potential reserve within the country.
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Reference

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Thank You!

