

Promotion of Potash in Rajasthan for Correcting the Imbalance

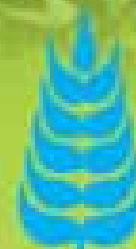




IPC

POTASH PROMOTION PROJECT

Correcting the Imbalance



IPL

A joint initiative of
International Potash Company (IPC), Moscow
and Indian Potash Limited (IPL), New Delhi
Agro Project of India, Belarus and Russia

Consumption kg/ha (2003-04)

Punjab	184.0 kg/ha
Rajasthan	40.5 kg/ha
India	89.8 kg/ha

Consumption ratio

Punjab	38.2:12.8:1
Rajasthan	48.6:14.3:1
India	6.6: 2.7:1

Wheat productivity (2002-03)

Punjab	4200 kg/ha
Rajasthan	2709 kg/ha
India	2618 kg/ha

Consumption of K remained insignificant and requires special focus.

Consumption of K₂O in India (kg/ha)

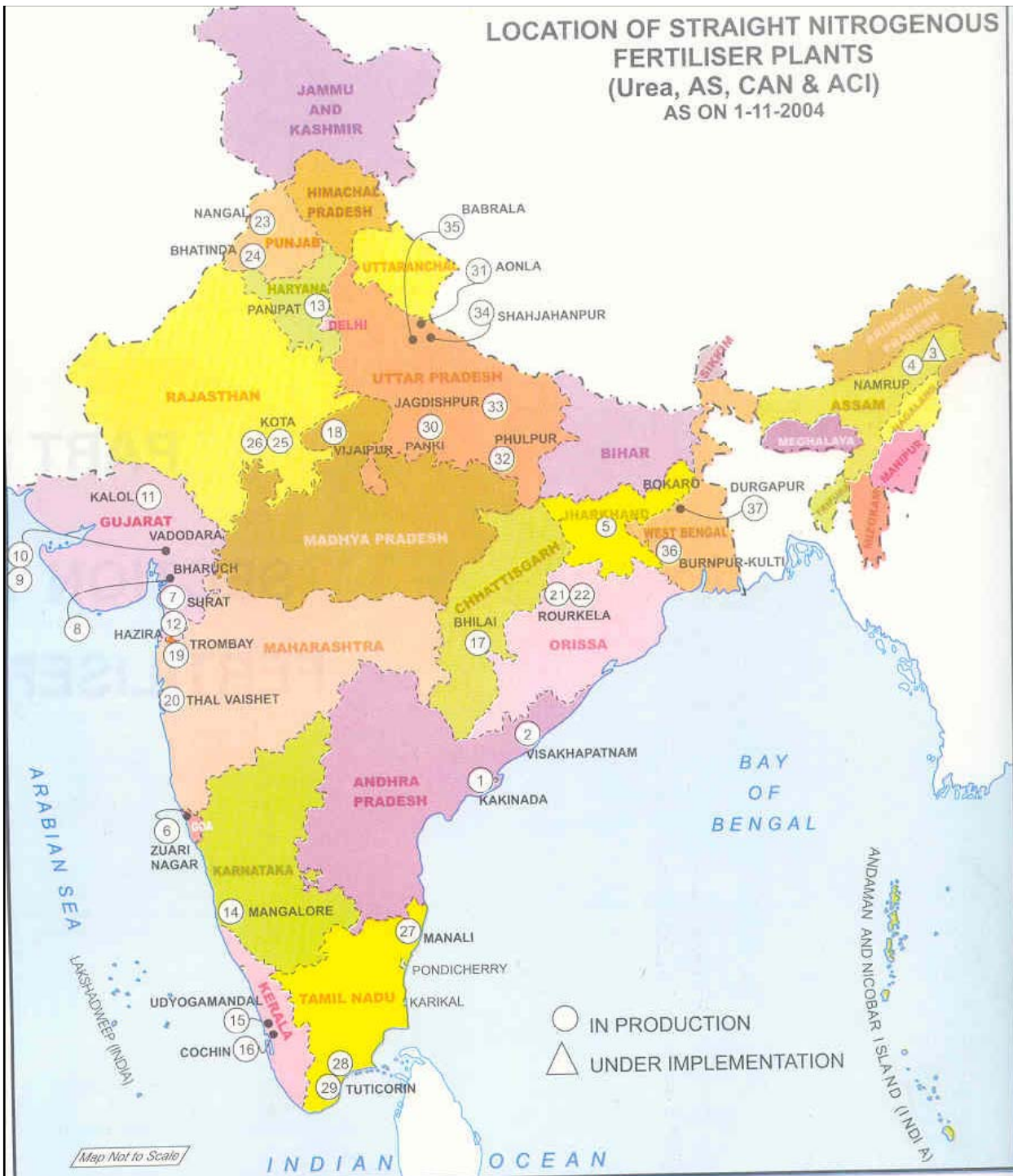
Year	consumption
1999-00	8.82
2000-01	8.38
2001-02	8.91
2002-02	8.56
2003-04	8.54

Consumption of Potash in Rajasthan(000t)

Year	MOP	K2O
1999-00	7.6	6.33
2000-01	6.5	5.38
2001-02	9.7	6.85
2002-02	9.5	7.01
2003-04	10.6	10.62

Average K2O consumption in Rajasthan during 2003-04 was 0.6 kg/ha.
Highest consumption was in Kota- 3.37 kg K2O /ha.
MOP contributed about 60% of total Potash consumption.

LOCATION OF STRAIGHT NITROGENOUS FERTILISER PLANTS (Urea, AS, CAN & ACI) AS ON 1-11-2004

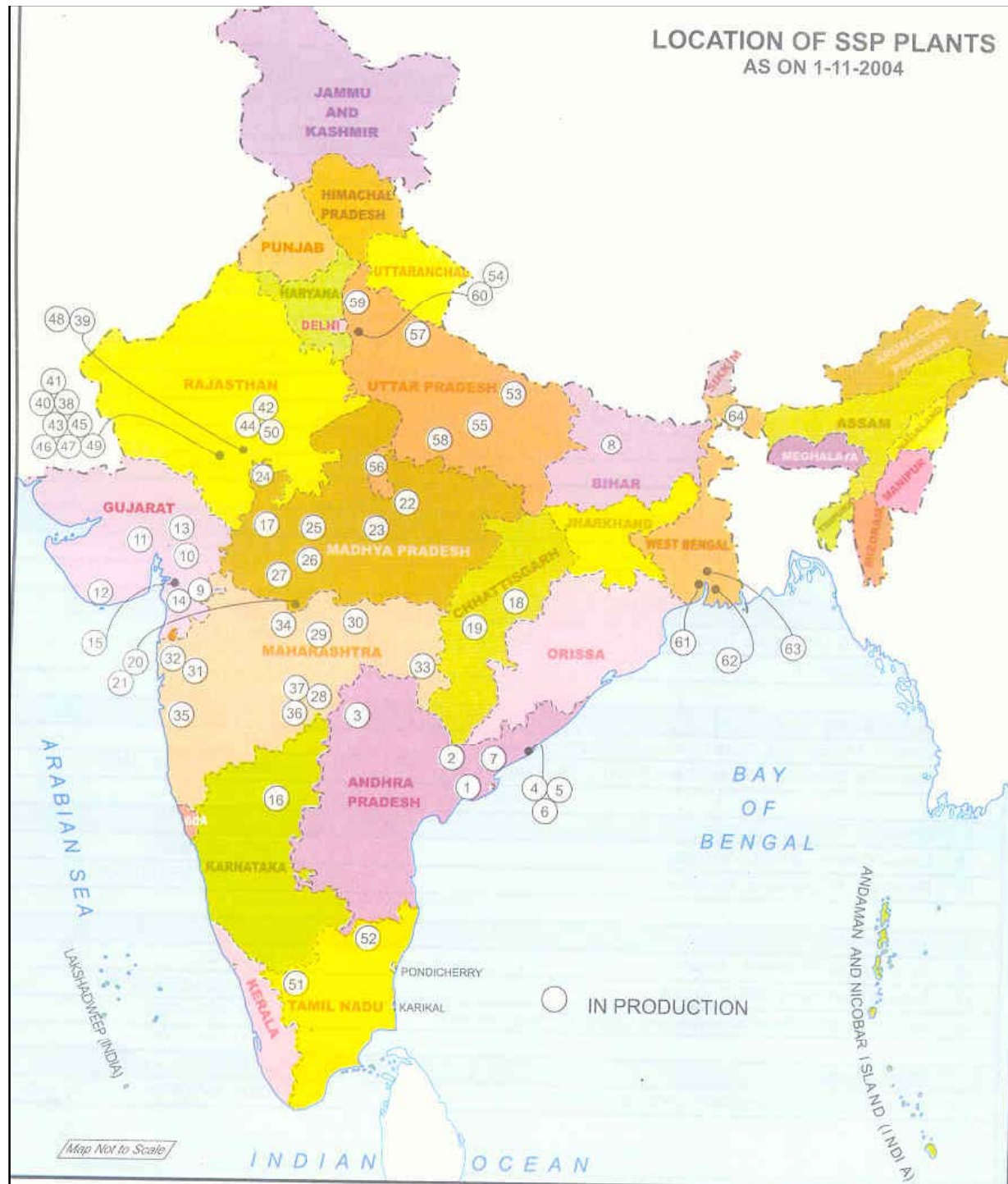


Map Not to Scale

LOCATION OF DAP AND OTHER COMPLEX FERTILISER PLANTS AS ON 1-11-2004



LOCATION OF SSP PLANTS AS ON 1-11-2004



All India District Ranking in Fertilizer Consumption (2003-04)

<u>District</u>	<u>Rank</u>	<u>Nutri.Cons(t)</u>	<u>kg/ha</u>
W. Godavari	1	196,758	332.9
Sriganganagar	56	71,717	70.0
Kota	103	52,355	125.0
Hanumangarh	110	50,783	42.8
Alwar	120	46,974	56.4
Baran	131	45,410	111.0
Jaipur	135	44,264	43.0
Chittorgarh	163	40,298	69.8
Bharatpur	171	38,331	64.6
S. Madhopur	198	34,438	89.2
Bundi	210	30,854	71.4

Productivity of Wheat in India (kg/ha)

State	1999-00	2000-01	2001-02	2002-03
Punjab	4696	4563	4532	4200
Haryana	4165	4106	4103	4053
U.P.	2764	2724	2755	2596
Rajasthan	2540	2405	2793	2709
M.P.	1823	1471	1642	1392
All India	2778	2708	2770	2747

**Average Nutrient Removal in kg per ton of Yield for Major Crops
under Field Conditions in India (* Dry fodder)**

No.	Crop	Produce	kg / ton produce		
			N	P2 O5	K2O
1	Rice	Paddy	20.1	11.2	30
2	Wheat	Grain	24.5	8.6	32.8
3	Sorghum	”	22	13.3	34
4	P. Millet	”	42.3	22.6	90.8
5	Maize	”	26.3	13.9	35.8
6	Chickpea	”	46.3	8.4	49.6
7	Pigeonpea	”	63.8	17.7	42.3
8	Groundnut	”	58.1	19.6	30.1
9	Soybean	”	66.8	17.7	44.4
10	Mustard	”	32.8	16.4	41.8
11	Linseed	”	19	12	33
12	Sunflower	”	56.8	25.9	105
13	Cotton	Seed	44.5	28.3	74.7
14	Sugarcane	Cane	1.7	0.2	2
15	Potato	Tuber	3.9	1.4	4.9
16	Cowpea	Fodder*	13.8	6.6	17.6
17	Maize	Fodder*	11.4	3.5	38.6

Nutrient Removal by some Fruits and Vegetable Crops (kg/ha)

Crop	Yield (t/ha)	N	P205	K20
Apple	25	100	45	180
Banana	40	250	60	1000
Citrus	30	100	60	350
Grape	20	170	60	220
Mango	15	100	25	110
Papaya	50	90	25	130
Pineapple	50	185	55	350
Cabbage	70	370	85	480
Carrot	30	125	55	200
Cauliflower	50	250	100	350
Cucumber	40	70	50	120
Egg Plant	60	175	40	300
Okra (bhindi)	20	60	25	90
Onion & Garlic	35	120	50	160
Spinach	25	120	45	200
Tomato	50	140	65	190

Nutrient Balance of Potassium Under Rice –Wheat System in Punjab

Yield t/ha	7.0 +4.3= 11.3
K Removed (kg/ha)	144+81 = 225
K added (kg/ha)	0.0
Negative balance (kg/ha)	225
K from GW irrigation (kg/ha)	46
Net negative balance (kg/ha)	176

Net negative balance of K in Maize –wheat system is 122 kg.
Total K removal by field crops increased from 159,000t in
1961 to 709,000t in 2002.

(Brar M.S. 2004)

Apparent Balance of Nutrients in Soils of Rajasthan (000 t)

Nutrient	Addition	Removal	Balance
N	546.6	835	-288.3
P ₂ O ₅	147.3	235.2	-87.9
K ₂ O	7	1068	-1061.1
S	2.4	152.5	-150.1

Gupta (2001)

Potassium Fertility Status of Soils In Rajasthan

Location	Low	Medium	High
Rajasthan	26	52	22

Most districts in Rajasthan categorized as medium in K status.
Districts Barmer, Churu, Sriganganagar, Jhunjhunu, Jodhpur and Sikar are in High K status.

Districts Dholpur, Rajsamand and Udaipur are in LM status.

Role of K in Plants

- Activate more than 60 enzymes, involved in major growth processes.
- Promotes photosynthesis, resulting in formation of carbohydrates, oils, fats and protein.
- Involved in the movements of photosynthates to storage organs (seed, tubers, roots and fruits).
- Improves efficiency of N fertilisers by enhancing production of proteins.
- Essential for formation of sugars in plants (sugarcane, potato and other crops).
- Increase ability of plants to withstand stress.
- Regulates absorption of water by plant roots.
- Improves quality of crops and prolong self –life.
- Essential for efficient biological N fixation.

Apparent NPK use efficiency in wheat

Nutrients	100% N	100% P	100% K	N/P₂O₅ saving (t)
N	32.0	51.4	64.0	53102
P	-	21.0	30.4	4779

K Deficiency symptoms

- Chlorosis along leaf margin followed by scorching & of the tips of older leaves which moves inward.
- Slow and stunted growth.
- Weak stalk poor root development.
- Low yield shriveled grain.
- Reduction in quality of crop produce.
- Reduction in resistance to pest, disease, drought and lodging.

**'K' DEFICIENCY SYMPTOMS
WITH 'RICE BLAST'**



**'RICE BLAST'
DISEASE**



NPK



NP

NP



“K” DEFICIENCY SYMPTOMS

NPK





← 50 kg K_2O / ha
More developed root systems
More nodules for N fixation



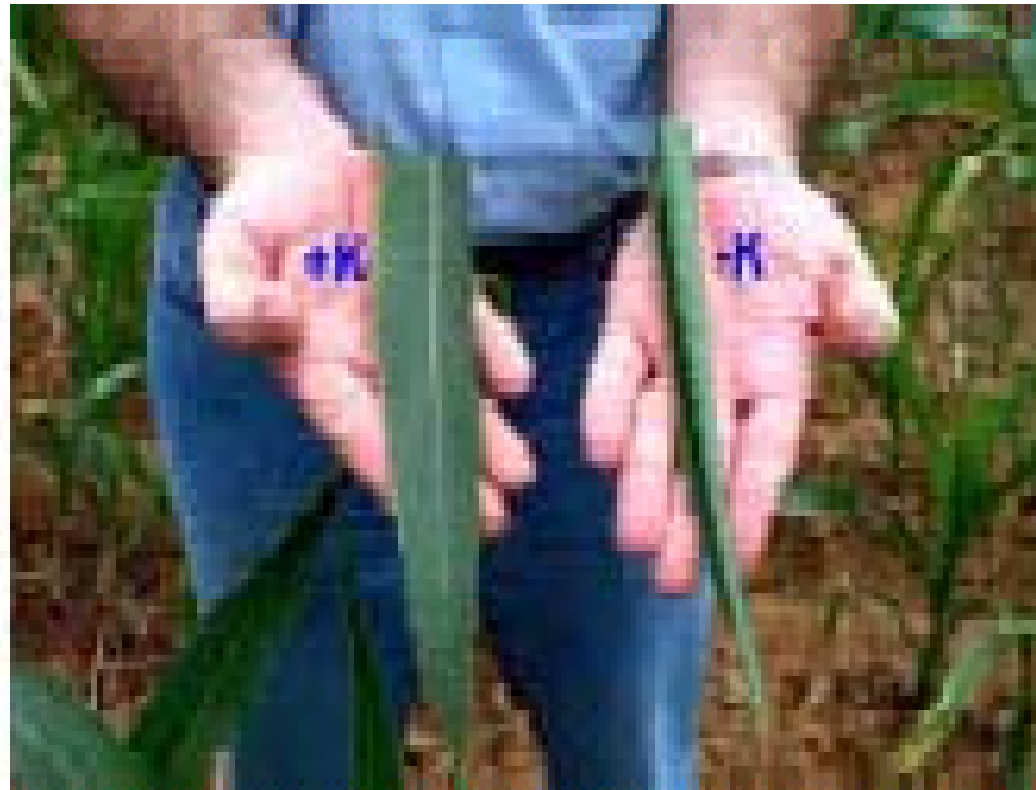
0 kg K_2O / ha →
Less developed root systems
Less nodules for N fixation

SOYBEAN

Sahore, M.P., India, 1999



K and drought in maize



K and lodging of wheat



Gurdaspur, Punjab, India, 1997

Distribution per Sale Point

particulars	Rajastahn	India
Village	2.8	2.2
No. of holdings	379	377
Net cropped area (ha)	1095	504
NPK consumption (tonnes)	38.9	61.3

Total sale points (14,158)

Dealer's network

- Makes fertiliser available to farmers
- Influence farmers purchase decisions
- Concentration in mandi towns
- Only match demand-supply
- Not playing major role in promoting K

Need for promotion of K

- K consumption not growing
- Deterioration in N:P:K ratio
- Soil fertility and crop yields declining
- Diversified crops need more K
- Quality considerations are getting importance
- Concessions have not helped in restoring the ratio at desired level
- Present promotional activities are below threshold level

Fertilizer Recommendations for Important Crops in Rajasthan-Nutrients in kg/ha

CROP	N	P ₂ O ₅	K ₂ O
HYV Rice	120	50	40
HYV Wheat	120	40	30
Sunflower	80	60	40
Sugarcane	150	60	30
Potato	150	60	60

General fertiliser recommendations need revision in the light of soil test values and crop response.

Farmers should be encouraged to adopt recommendations based on soil test.







कृषि प्रसार कार्यकर्ता प्रशिक्षण



पोटाश प्रबोधन प्रोजेक्ट
Correcting the Imbalance



नाइट्रोजन और फास्फोरस के साथ पोटाश का प्रयोग अवश्य करें











पोटाश प्रमोशन प्रोजेक्ट



आगतम्

प्रमोशन प्रोजेक्ट
tint the Imbalance
सक के साथ पोटाश का प्रयोग कागज करें



आई. पी. एल.
सन्तुलित पशु आहार

पोटाश प्रमोशन प्रोजेक्ट
पोटाश लिमिटेड नई दिल्ली



भारतीय पोटाश

भारतीय पोटाश
क्षेत्रीय कार्यालय - 3. गी













Application of Potash can
not be ignored now.

**BALANCED FERTILISER USE WITH
RECOMMENDED N:P:K DOSE/RATIO
IS ESSENTIAL FOR :**

- * **CROP PRODUCTIVITY,**
- * **QUALITY OF FARM PRODUCE,**
- * **SOIL HEALTH,**
- * **ENVIRONMENTAL DEGRADATION**

THANK YOU

