

Role of NPK in Fertilizers

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ABSTRACT: The consumption of each plant nutrient increased significantly in absolute as well as in relative terms during the last 25 years. The percentage share of each Nutrient in total plant nutrients applied in the state during 1966-67 to 1990-91 has been presented in Table No. 5.1.7. It is evident from the table that nitrogen has assumed the status of most important plant nutrient throughout the study years. But its share in total plant nutrient showed continued decline with some fluctuations. In 1966-67 the share of nitrogen in total plant nutrient applied was 86.31 per cent which reached up to 65.40 per cent in 1990-91.

Introduction The NPK Share:

Year	Nitrogen Share %	Phosphate Share %	Potash Share %
1966-67	86.306	12.081	1.613
1967-68	75.527	20.018	4.455
1968-69	76.331	19.363	4.306
1969-70	76.384	19.971	3.645
1970-71	75.625	20.927	3.448
1971-72	78.588	16.058	5.354
1972-73	78.068	15.773	6.159
1973-74	75.514	18.352	6.134
1974-75	81.489	15.019	3.492
1975-76	80.712	16.528	2.760
1976-77	80.247	16.059	3.694
1977-78	79.157	16.559	4.284
1978-79	78.943	16.842	4.215
1979-80	78.422	17.729	3.849
1980-81	78.919	17.011	4.070
1981-82	77.299	18.652	4.049
1982-83	76.038	20.380	3.582
1983-84	75.355	22.036	2.609
1984-85	72.813	24.868	2.319
1985-86	72.807	25.128	2.065
1986-87	72.195	26.281	1.524
1987-88	69.684	28.867	1.449
1988-89	69.400	29.389	1.211
1989-90	67.815	30.452	1.693
1990-91	65.404	32.718	1.878

The importance gained by the phosphatic nutrient has been shown in table clearly Share of Phosphate in total plant nutrient applied increased from 12.08 per cent in 1966-67 to 32.72 per cent in 1990-91 with marginal fluctuations.

The application of plant Nutrient in the form of potash did not indicate any definite trend during whole study period. Lowest share was recorded in 1987-88 with 1.45 per cent share of total plant nutrient. In year 1972-73, the highest share observed was 6.15 per cent from nutrients.

total
NPK Ratio :

Year	India				Rajasthan			
	N/X	Y/X	N/Y	K/K	N/X	Y/X	N/Y	K/K
1966-67	6.5	2.2	3.0	1	53.52	7.49	7.14	1
1967-68	5.5	2.0	3.1	1	16.95	4.49	3.77	1
1968-69	7.1	2.2	3.2	1	17.73	4.50	3.94	1
1969-70	6.5	2.0	3.3	1	20.95	5.48	3.82	1
1970-71	6.3	2.3	2.7	1	21.95	6.08	3.61	1
1971-72	6.0	1.9	3.2	1	14.68	3.80	4.89	1
1972-73	5.3	1.7	3.2	1	12.68	2.56	4.95	1
1973-74	5.1	1.8	2.8	1	12.31	3.00	4.11	1
1974-75	5.3	1.4	3.7	1	23.34	4.30	5.43	1
1975-76	7.7	1.7	4.6	1	29.25	5.99	4.88	1
1976-77	7.7	2.0	3.9	1	21.73	4.35	5.00	1
1977-78	5.8	1.7	3.4	1	18.48	3.87	4.78	1
1978-79	5.8	1.9	3.1	1	18.73	3.99	4.69	1
1979-80	5.8	1.9	3.0	1	20.38	4.61	4.42	1
1980-81	5.9	1.9	3.0	1	19.39	4.18	4.64	1
1981-82	6.0	1.9	3.1	1	19.09	4.61	4.14	1
1982-83	5.8	2.0	2.9	1	21.23	5.69	3.73	1
1983-84	6.7	2.2	2.9	1	28.88	8.45	3.42	1
1984-85	6.5	2.2	2.9	1	31.40	10.72	2.93	1
1985-86	7.0	2.5	2.8	1	35.24	12.16	2.90	1
1986-87	6.7	2.4	2.7	1	47.34	17.23	2.75	1
1987-88	6.3	2.4	2.6	1	48.09	19.92	2.41	1
1988-89	6.8	2.5	2.5	1	57.34	24.28	2.36	1
1989-90	6.0	2.4	2.5	1	40.06	18.01	2.22	1
1990-91	5.9	2.4	2.4	1	34.82	17.42	2.00	1

X - K₂O, Y - P₂O₅

Consumption ratio of N and P₂O₅ in relation to K₂O, and N in relation to P₂O₅ has been presented in Table No 5.1.8 for country as well as state

In India, consumption ratio of N and P₂O₅ in relation to K₂O was at a high level in the beginning and depicted wide fluctuations. On the other hand, ratio of N in relation to P₂O₅, though was at a high level in the start, declined fairly well over time. As per the estimates of Fertilizer Association of India. Consumption ratio of NPK is quiet

different from the ideal ratio. There is still need for more use of P205 and K20 to make the N: P205: K20 ratio more balanced.

The nutrient ratio of Rajasthan presents altogether different growth pattern of fertilizer consumption. Though the consumption ratio of N and P205 in relation K20 was at very high level, the difference came down sharply within the period of 13 years. The consumption ratio of N and P205 in relation to X20 was 53.52: 7.49 in 1966-67 which came down to 18.73: 3.99 in 1978-79 with marginal fluctuations. From 1979-80 onwards, these ratios showed reverse picture with wide fluctuations. It means that rate of growth of consumption of potassium in the span of 12 years has been slower than nitrogen and phosphorous. The ratio was 20.38: 4.61 in 1979-80 and by 1990-91 it was 34: 82: 17: 42 which was far away from recommended ratio.

The consumption ratio of N in relation P205 presents completely different picture, even though it was at the high level in the start, it declined fairly well over time. The ratio was 7: 49 in 1966-67 which showed declining trend throughout with marginal fluctuations and reached to the most desirable ratio of 2: 1 in 1990-91. Thus further growth in N and P205 should be maintained with the same ratio for keeping the balance use in the state.

Season-Wise Consumption of Fertilizers

Season wise distribution of fertilizer use is available only from 1972-73 onwards. It has been described through Appendix No. 5.1.1 and Table No 5.19.

The appendix 5.4 revealed that larger quantity of fertilizer nutrients were used in Rabi season over Kharif season in the state. These findings were also in agreement with all India consumption pattern where larger quantity of fertilizer nutrients were used in Rabi season than in Kharif season (various issues of fertilizer statistics). The main reason for this was given in a survey

of fertilizer sector in India. According to that winter crops are generally grown in assured water supply areas, and availability of water reduces the risk involved in using chemical fertilizers. The farmers preference to use relatively more fertilizer in Rabi than Kharif season could be supported by above mentioned survey report. During the year 1990-91 the total cropped area was 19,380 hectare of which 57 and 33 per cent area were under Rabi and Kharif crops, respectively. Out of this Kharif crop raised area only 17 per cent received irrigation of total irrigated area in the state. Whereas the 33 per cent total Rabi season cropped area received 83 per cent of gross irrigated area. The large area under Kharif season were mainly dominated by Bajara, Jowar, Maize and Kharif pulses which are mainly dependent upon the monsoon rains in the state. The erratic rainfall reduces the scope of higher use of fertilizers in the state. The assured irrigated Kharif crops like cotton, rice and sugarcane were located under few patches with constant area in the state. In case of Rabi crops highest irrigated area was under wheat followed by rape seeds, mustard and with some area under Rabi pulses. As it has already been discussed the wells are the main sources of irrigation in the state and their discharge again depends upon the quantum of rain fall which is low and erratic. The canal irrigated area were concentrated in certain pockets and the use of fertilizers in such areas is remarkably better. (Fertilizer use and limitations in Rajasthan. Sharma and Varghese]

The close scrutiny of Ratio table revealed that in Rajasthan during 1982-83 the Kharif-Rabi ratio for total plant nutrients was 27: 66: 72.34 which showed widest gap during the observed period where as in the year 1990-91 it registered lowest gap i.e. 40.39: 59.61. This showed that rate of variation of Kharif was between 20 to 40 per cent and that of Rabi was between 60 to 70 per cent. In the case of nitrogenous fertilizers the lowest difference was observed in 1990-91 with ratio of 38: 02.

61.68 and highest difference was observed with the ratio of 27 60: 72.20 in 1972-73. It indicated variations between 20 to 50 per cent and between 50 to 80 per cent in Kharif and Rabi season, respectively.

The variation indicated by phosphatic fertilizers in Kharif ranges between 20 to 60 per cent and in Rabi between 40 to 80 per cent. The lowest and highest difference years were 1976-77 and 1990-91 with the Kharif and Rabi ratio of 27.46: 72.54 and 44.27: 55.73 respectively. The potassic fertilizer followed the Rabi dominancy except for the year 1990-91 where the ratio was 85.04 44.09. In the remaining Years the highest difference in Kharif-Rabi season was observed in the year 1976-77 with 23.54 76 46 and lowest difference was noted in the year 1989-90 with the ratio of 42.24: 57.76

Thus 20 to 60 per cent variation was observed in Kharif Season and 40 to 80 per cent in Rabi Season.

Conclusion

The foregoing analysis reveals the overall trend in the pattern of growth of fertilizer consumption at state the level The uneven trend is noted at the aggregate level is contributed by various factors In order to analyse each one of them a disaggregate study across the districts is essential Districts which enjoy favorable socio-economic, institutional and infrastructural factors may contribute more to diffused and intensive use of fertilizers than districts which do not enjoy such factors. Hence, it was decided to switch over to district level analysis at this Juncture Biochar contains long haul and high carbon content when applied to the dirt. While applying biochar to build the capacity to assimilate and hold water, keep nourishment in the dirt, work on the wholesome substance accessible. Compost is a significant component to increment crop efficiency and soil fruitfulness security. In any case, to limit the mischief brought about by over the top compost use, and further develop soil, this study

involves NPK synthetic manures in mix with biochar to deliver composts for yearly yields. The consequences of this study show that the creation of NPK manure joined with biochar will expand the cost of compost, while the expansion in biochar content lessens the chance of nitrogen misfortune during capacity and when applied to soil. In the sort of compost added different biochar proportions, type NPK (5: 10: 3) added 20% biochar the most ideal for large scale manufacturing.

REFERENCES

1. Anderson, M.A. (1956). "An appraisal of factors affecting the acceptance and use of fertilizer in Iowa, 1953", Iowa Agril. Experiment Station-Iowa College special Report No. 16, Ames, Iowa, June, 1956.
2. Arputharaj, C and R. Rajagapalan (1988). "Study of Consumption of Fertilizer in Tamil Nadu", Agriculture Situation of India, 43(6), PP. 535-537.
3. Arya, S.L. (1991). "Disparities in Fertilizers Consumption in Haryana - A District-Wise Analysis", Agricultural Situation in India, XLVI (1), PP.17-20.
4. Bhaffy, J.Z. (1982). "Why Farmers Shut Pertilizer ?Economic Analysis", Eastern Economist, New Delhi, PP. 6-7.
5. Bhatia, M.S. (1983). "Pattern of Fertilizer Consumption in India", Agril. Situation in India, 38(5), PP. 311-316.
6. Bliss, C.J. and N.S. Stren (1981), "Palampur : Studies in Economy of the North Indian Village", Oxford University Press, New Delhi.
7. Chaudhari, A.K. and Sirohi (1973). "Allocation of fertilizers among crops and regions in UttarPradesh" 239 Indian Journal of Agril Rosomics. 28(3), PP 46 - 61
8. Chaudhari, 8. and X. Sain (1986) "Fertilizer use as of capital formation in agriculture. Indies Journal of Agril, Economics, 41(4), PP. 511-512.
9. Dahiya, R.C. (1967). "Prediction of fertilizer consumption in India", Indian Journal of Agril. Economics, 22(1), PP. 108-109