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RECLAMATION OF SEA WATER INTRUDED SOIL

A pot culture experiment was conducted during 1995, to study the influence of various organic manures, gypsum and irrigation water with different SAR values on the physico-chemical properties of soil and yield of rice var. ADT 36. Bulk sample collected from Kudankulam village in the coastal belt of Radhapuram of Tamil Nadu was used for pot culture experiment. The experimental soil had the following characters viz., pH 8.6, EC 1.85 dS m^{-1}, exch. Ca 5.4 me $100g^{-1}$, exch. Mg 2.75 me $100g^{-1}$, exch. Na 3.03 me $100g^{-1}$ and ESP 23.50. Irrigation water used for the study was prepared in the laboratory based on the SAR range of ground water of the study area. There were four main plot treatments (control, farmyard manure, composted coirpith and composted coirpith with limestone) and three subplot treatments (control, 50 per cent gypsum requirement [GR-1] and 100 per cent gypsum requirement [GR-II] and two subplot treatments (SAR-1, water with SAR value of 4 and SAR-2, water with SAR value of 8). The soil samples were analysed for pH, EC, exchangeable cations and ESP (Jackson, 1958; Piper, 1942).

Table 1. Influence of soil amendments on pH, EC, exch. cations of the soil and grain yield

Treatments	pH		EC dS m^{-1}		Exch. Ca^{2+} me $100g^{-1}$		Exch. Mg^{2+} me $100g^{-1}$		Exch. Na^{+} me $100g^{-1}$		ESP		Yield g pot^{-1}	
	SAR 1	SAR 2	SAR 1	SAR 2	SAR 1	SAR 2	SAR 1	SAR 2	SAR 1	SAR 2	SAR 1	SAR 2	SAR 1	SAR 2
Control	8.6	8.5	1.9	2.0	5.2	5.3	2.8	2.5	2.9	3.1	23.5	24.9	7.29	7.03
GR I	8.2	8.4	1.7	2.0	8.0	6.5	2.0	2.5	1.7	2.6	13.8	18.0	8.59	7.57
GR II	8.1	8.1	1.9	2.0	7.3	6.6	2.3	2.6	2.2	2.9	20.9	23.1	8.46	7.65
FYM	8.3	8.1	1.7	1.8	6.9	6.3	2.6	2.5	2.3	3.0	18.4	23.9	8.88	8.46
FYM+GR I	8.0	7.9	1.7	1.7	7.9	6.9	2.5	2.6	1.6	2.4	12.9	16.8	14.09	8.58
FYM+ GR II	7.9	7.9	1.7	1.7	7.9	6.3	2.2	2.6	2.1	2.8	19.6	22.2	10.18	8.27
CCP	8.1	7.8	1.7	1.7	7.2	6.3	2.5	2.3	2.2	2.8	17.9	22.7	8.62	7.92
CCP+GR 1	7.7	7.9	1.6	1.8	7.9	6.5	2.4	2.2	1.5	2.4	11.8	15.4	15.46	8.23
CCP+GR II	7.9	7.9	1.8	1.7	7.5	6.8	2.3	2.2	1.6	2.7	19.6	21.8	9.28	8.05
CCP + limestone (LS)	8.2	8.2	1.8	1.8	6.9	6.3	2.1	2.2	2.2	2.8	17.9	22.2	8.58	7.61
CCP +LS+GR I	8.1	8.3	1.8	1.8	8.4	6.6	2.4	2.4	1.7	2.4	13.5	14.4	12.32	7.82
CCP+LS+GR II	8.0	8.5	1.8	1.8	7.3	6,7	2.4	2.2	1.8	2.6	19.6	20.9	8.98	7.62
CD(0.05)	0.13		0.13		0.78		1.03		0.23		1.18		0.09	

Application of composted coirpith plus 50 per cent gypsum requirement (GR-1) significantly reduced the pH of soil (Table 1). Jt may be due to the decomposition of organic manures

which release some of organic acids and reduce the pH of soil. There was no significant difference with respect to EC of the soil.

Application of composted coirpith with limestone recorded maximum exch. Ca than all other treatments (Table 1). The influence of various soil amendments showed no significant results regarding exch. Mg content.

In the unamended soil, exch. Na was not affected by two different levels of salinity. Gypsum at 50 per cent (GR-1) recorded the lowest value for exch. Na with SAR-1 water. Application of composted coirpith reduced the exch. Na content of soil (Table 1).

Gypsum at 50 per cent (GR-1) recorded lowest value in combination with SAR-1 water. The pot under treatment of SAR-2 recorded maximum value. Application of composted coirpith was found to produce the lowest ESP followed by farm yard manure and composted coirpith with limestone (Table 1).

With regard to the grain yield, composted coirpith along with gypsum at 50 per cent (GR-1) recorded the maximum yield and reduced the salinity hazard of the irrigation water than other amendments. It may be due to the higher availability of nutrients released by the decomposing organic manures alone and in combination with gypsum resulting in an efficient utilization of nutrient.

Application of composted coirpith along with gypsum at 50 per cent GR reduced the soil pH, EC, exch Na and ESP significantly and it increased the rice grain yield also.

Agricultural College and Research Institute
Killikulam 627 258, Vallanad, Tamil Nadu, India

U. Bagavathi Animal
P. P. Mahendran, G. Arunachalam

REFERENCES

Jackson, M. L., 1958. *Soil Chemical Analysis.* Prentice Hall of India Private Limited, New Delhi

Piper, C. S. 1942. *Soil and Plant Analysis.* Hans Publisher, Bombay