based on Soil Test Results. Soils of South Arcot require judicious nitrogenous fertilisers along with phosphatic manures as to increase the production.

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Effect of Salinity on the South Indian Field Crops Yield in Ragi (*Eleusine coracana* Gaertn)

by

Y. B. MORACHAN[1], A. RAJAGOPAL[2] and N. SANKARAN[3]

Introduction: Salinity is one of the problems posed by nature. Tamil Nadu with vast coastline and extensive areas of black cotton soil suffers from salinity havoc in considerable area. Reclamation of saline soils with various methods is being done. However, selection of saline tolerant crops is important to bring the saline lands under plough and to grow some crops in the reclamation phase. Different plant species respond to salinity, differentially. Even saline tolerant varieties in field crops are also met with. *Eleusine coracana* usually considered to be a saline tolerant crop is being cultivated in areas under saline conditions. Hence a study on the influence of salinity on the varieties of this crop will provide useful information on their response to saline conditions. An investigation has been taken up to study the influence of salinity on three varieties of ragi and the yield performance of these varieties are discussed in this paper.

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1. Professor and Head, Department of Agronomy, Agricultural College and Research Institute, Coimbatore-3. 2. M. Sc. (Ag.) (Previous) student, Agronomy Faculty, Agricultural College and Research Institute, Coimbatore-3. 3. Fundamental Research Assistant Agronomy Faculty, Agricultural College and Research Institute, Coimbatore-3.

Review of Literature: Salinity effect on the germination and early vigour was studied in ragi in which it has been concluded that the germination was sharply decreasing in the treatments receiving 6000 ppm and above. Varietal difference also was observed (Kalippan *et al.* 1967). The duration from sowing to panicle emergence increased with salt concentration. Grain setting was progressively decreased with increased salt concentration. (Kaliappan *et al.* 1968).

Kaddh and Fakhry (1961) observed all the rice varieties tried, exhibited low and differntial tolerance to salt. Enhrencron (1965) reported that rice planted in soils containing 150–350 mg/100 gm of chloride had shown retarded growth and decreased yield. Balasubramanian (1965) reported that in the case of rice there was a marked decrease in the number of panicles and number of grains per panicle due to salinity. According to Desai *et al.* (1957) the number of panicles in rice declined progressively with the increased concentration of sodium chloride up to a level of 0.5% in the irrigation water. Narasimha Rao and Murty (1963) found the grain yield in rice reduced by using sodium salts.

Materials and Methods: An experiment was conducted with three varieties of ragi (viz.) CO 7, CO 8, and ECW 840. The nursery was raised using rain water for irrigation. The soil selected for investigation was red loam with an EC of 6 m. mhos per centimetre and pH between 7.6 to 7.8. The treatments included four levels of salt concentration with rain water as control is indicated below: (1) Rain water (300 ppm), (2) 2000 ppm, (3) 4000 ppm, (4) 6000 ppm, (5) 8000 ppm. Different saline concentrations were prepared by dissolving sodium chloride and Calcium chloride on 1 : 1 ratio taking the total soluble salts of 300 ppm in rain water. There were three replications. All the treatments received the basal dose of farm yard manure at the rate of 10 tons per acre and N, P_2O_5 and K_2O at the rate of 40, 20 and 20 pounds per acre. Three plants were maintained per pot. The experiment was conducted under sheltered conditions during three consecutive years from 1966-67 to 1968-69.

Results and Discussions: (a) *Varieties:* The data on yield under different varieties during the three years and mean yield of the three years are presented in Table 1. There was significant difference between the three varieties, during the first two years, while it was not statistically significant during the third year. Ragi CO 7 was significantly superior to the other two varieties during the second year, and was on par with CO 8 during the first year. During the third year also yield of CO 7 ragi was the maximum though the difference was statistically not significant. The performance of ECW 840 was significantly poorer than CO 8 both in the first and second years and resulted in numerically lesser yield, than the other two varieties in the third year. However, the combined analysis revealed that the difference between varieties was not significant. The yield varied from year to year.

(b) *Treatments:* Results in Table 2 indicate the effect of different levels of salinity treatments on the yield of ragi. The deleterious effect of salinity treatments was highly pronounced during all the three years of the trial.

TABLE 1. *Grain yield of ragi in grams*

Year	1966	1967	1968	Mean
Varieties				
CO 7	7.18	23.52	13.41	14.70
CO 8	7.45	16.40	12.67	12.17
ECW 840	6 13	13.21	10.72	10.02
Mean	6.92	17.71	12.27	12.30
'F' Test	*	**	N.S.	N.S.
SE D.	0.452	0.547	1.078	2.815
CD.at 5%	0.93	1.12		

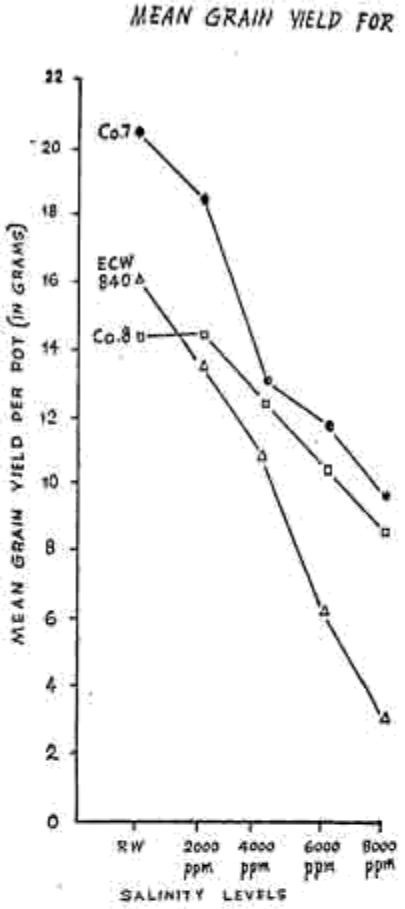
* Significant at 5% level ** Significant 1% level N.S. Not significant

TABLE 2. *Grain yield of ragi in gms*

Year	1966	1967	1968	Mean
Varieties				
Rain water	9.12	26.66	16.09	16 95
2000 ppm	8.65	24.28	13.66	15.53
4000 ppm	7.24	16.55	12.71	12.16
6000 ppm	5.94	11.99	11.01	9.64
8000 ppm	4.64	9.06	7.88	7.19
Mean	6.92	17.71	12.27	12.30
'F' test	**	**	**	*
SE d	0.583	0.707	1.39	2.63
C.D. at 5%	1.20	1.45	2.85	6.08

* Significant at 5% level ** Significant at 1% level

The yield significantly decreased with the increases in the level of salinity stress. Salinity treatment at the level of 8000 ppm. resulted in significantly least yield, during all the three years. During the second year the yield significantly decreased in proportion to every added level of salt concentration. Salinity treatment at the level of 6000 ppm resulted in significantly poorer yield than 2000 ppm 4000 ppm and rainwater during the first and second year. The trend in effect of 2000 ppm and 4000 ppm were not consistent during all the three years.



From the combined analysis it was seen that there was significant decrease in yield to each increase in salinity treatments, starting from 4000 ppm. The decrease in yield with 2000 ppm over rain water (control) treatment was not significantly pronounced.

(c) *Interaction:* The mean grain yield for three years have been furnished in Table 1 and 2. The effect of various salinity treatments over the different varieties was varied. The variety ECW 840 was more vulnerable against salinity than the other two varieties. The magnitude of decrease in yield of the salinity levels of 6000 ppm and 8000 ppm was relatively more with ECW 840 than the other two varieties.

The mean grain yield for three years is shown in the graph. All the three varieties were affected by saline irrigation. It was seen that the variety CO 7 was having tolerence towards salinity compared to the varieties CO 8 and ECW 840. The decrease of yield in the variety ECW 840 was at a higher magnitude indicating its susceptibility to saline conditions.

The derease in yield due to salinity treatment is a cumulative effect of decrease in germination, decrease in the height of shoot of young seedlings and progressive reduction in the number of grains due to higher salt concentration,

which has already been reported by Kaliappan *et al.* (1967 and 1968). The results are in confirmation with previous findings wherein decreased yields due to salinity treatments have been reported in the case of rice (Ehreneron 1965).

Summary and Conclusion: From a pot culture experiment conducted during the three years to study the effect of salinity and yield of three varieties of ragi, the following conclusions were drawn. (i) It was found that yield significantly decreased under saline conditions. The adverse effect of salinity was found to be very severe when the salt concentration was more than 4000 ppm. (ii) The ragi variety ECW 840 was more susceptible to salinity than the varieties CO 7 and CO 8. (iii) The magnitude of decrease in yield for various levels of saline treatments varied between the varieties.

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Influence of Major Nutrients on *Eleucine corocana* (*Ragi*)- Yield Attributes*

by

S. SUBRAMANIAN[1], Y. B. MORACHAN[2], and K. KALIAPPAN[3]

Introduction: The plant height, number of ear bearing tillers, number of fingers and straw yield have close relation with the ultimate grain yield of *ragi* (*Eleucine coracana*). These yield atributes inturn are influenced by the application of major nutrients. In this paper the influence of sources and levels of nitrogen with phosphorus and potassium on the yeild altributes of *ragi* CO 7 are discussed.

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1. Lecturer in Agronomy, 2. Professor of Agronomy, 3. Agronomist, Agricultural College and Research Institute, Coimbatore-3.