The electrical conductivity values in these studies ranged from 55.0 to 65.0 micro mhos/cm for the seed threshed by different methods (Table 1 and 2).

REFERENCES

BASKIN, C.C. and J.C. DELOUCHE. 1971. Effect of mechanical shelling on storability of peanut (Arachis hypogaea L.) seed Proc. Assi. Off. Seed Anal., 61 : 73-78.

BRAHMANAND and D.K. BISWAS. 1974. Studies on impact damage to wheat seeds. J. Agril. Engg., 11 : 9-13.

CHHABRA, S.D. and K.N. SINGH. 1975. Paddy properties related to threshing. J.Agril.Engg., 17 : 17-20.

DEXTER, S.T. 1966. Conditioning dry bean seed (Phaselolus vulgaris L.) for better processing quality and seed germination. Agron.J., 58 : 629.

GREEN, D.E., L.E. CAVANAH and E.H. PINNELL. 1966. Effect of seed moisture content, field weathering and combine cylinder speed on soybean seed quality. Crop Sci., 6 : 7.

KANTOR, D.J. and O.J. WEBSTER. 1967. Effects of freezing and mechanical injury on viability of sorghum seed. Crop Sci., 7 : 196.

MATTHEWS, S. and W.T. BRADNOCK. 1968. Relationship between seed exudation and field emergence in peas and french beans Hort. Res.., 8 : 89-93.

MOORE, R.P. 1986. Mechanically damaged seed seriously reduce crop stands. Sth. Seedman., 19 : 73.

OVCHAROV, K.E. 1969. The physiology of different quality of seeds. Proc.Int.Seed Test.Ass.,34 : 305-313.

PANESAR, B.S. and B.S. PATHAK. 1974. Investigations into mecahnics of rub threshing-I. J. Agril.Engg., 11 : 1-8.

SINGH, B. 1977. Reducing kernel damage in maize shelling. J.Agril. Engg., 14 : 58-61.

STRONA, I.G. 1966. General seed testing of field crops. As quoted by Ovcharov, K.E. 1977. Physiological basis of seed germination. Amerind Publishing Co. Pvt.Ltd., New Delhi.

STRONA, I.G. and V.M. SHEVCHENKO. 1965. Increasing the yield of ensured seeds of mazie. As quoted by Ovcharov, K.E. 1977. Physiological basis of seed germination. American Publishing Co.Pvt.Ltd., New Delhi.

WORTMAN, L.S. and E.H. RINKE. 1951. Seed corn injury at various stages of processing and its effect upon cold test performance. Agron J., 43 : 299-305.

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CORRECTION OF CHLOROSIS IN SUGARCANE

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ABSTRACT

The field experiments conducted in calcareous soils of Coimbatore district to alleviate Fe and Zn deficiencies in sugarcane crop and to maximise the cane yield, showed that calcareous soils with low Fe availability, 100 kg/ha alone as soil application or 50 kg $FeSO_4$ plus FYM at 20 t/ha can be resorted to maximise cane yield of Mandya sugarcane crop. For correcting Fe deficiency in standing crop, one per cent $FeSO_4$ foliar spray can be given on 45th and 90th day after planting. From another field experiment, the results showed that application of $ZnSO_4$ 50 kg/ha along with 100 kg $FeSO_4$/ha significantly increased yield of ratoon crop of Co.419 sugarcane over NPK treated control Increase in sucrose content was obtained in the above crop through foliar spray of 0.5% $ZnSO_4$ four times at 30, 50, 70 and 90 days after planting.

Of the various soil properties, soils rich in $CaCO_3$ causes lime induced chlorosis in crop plants, such as sugarcane, sorghum, grass species, jasmine, crossandra, etc. Nearly 15% of the cultivable soils in Coimbatore and Periyar districts are calcareous soils. Hence, an attempt was made to investigate on the causes and correction of chlorosis in sugarcane in calacareous soils of Coimbatore district.

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Table 1. Cane yield, DTPA-Fe in post-harvest soil and total Fe in cane juice - Annur Experiment (Mean of three replications)

Sl. No.	Treatments	Yield (t/ha)	DTPA-Fe in post - harvest soil (ppm)	Total Fe in cane juice (ppm)
1.	Control (NPK alone)	67.8	4.80	29.2
2.	NPK + 50 kg $FeSO_4$ / ha	104.0	5.00	62.3
3.	NPK + 100 kg $FeSO_4$ / ha	135.1	4.31	94.2
4.	NPK + 200 kg $FeSO_4$ / ha	109.5	5.10	31.3
5.	T2 + FYM 20 t/ha	131.7	5.00	34.5
6.	T3 + FYM 20 t/ha	131.0	4.70	38.3
7.	T4 + FYM 20 t/ha	101.2	5.19	52.8
8.	NPK + 1% $FeSO_4$ on 45th, 60th, 75th & 90th days	116.1	4.61	39.5
9.	NPK + 2% $FeSO_4$ on 45th, 60th, 75th & 90th days	72.6	5.00	58.9
10.	NPK + 1% $FeSO_4$ on 45th and 90th days	130.7	5.20	35.2
11.	NPK + 2% $FeSO_4$ on 45th and 90th days	107.7	4.80	34.8
	C.D. (P=0.05)	21.4	NS	10.6

Initial soil : Availalble Zn : 0.90 ppm
Available Fe : 5.90 ppm

MATERIALS AND METHODS.

First field experiment was conducted in farmer's holding at Annur village of Coimbatore district of Tamil Nadu to find out the effect of application of FYM and $FeSO_4$ on yield and quality of sugarcane with the Mandya sugarcane. The experimental soil was deficient in available Fe. The experiment was conducted in randomised block design with three replications. The treatments consisted of individual application of $FeSO_4$ at three levels 50, 100 and 200 kg $FeSO_4$/ha. Farm yard manure at 20 tons/ha and combined application of FYM with 100 and 200 kg $FeSO_4$/ha were applied. A common dose of NPK (225 Kg N; 62.5 kg P_2O_5 and 115 kg K_2O/ha) were applied to all plots. Foliar sprays of different concentrations of Fe (1 and 2%) were also given on 45, 60 and 75 and 90 days after sowing.

The post-harvest soil samples were analysed for available-Fe (Lindsay and Norvell, 1978). The juice samples were analysed for total Fe.

Second field experiment was conducted dur villa e of Coimbatore district. The soil was calcareous and was deficient in available-Fe. In order to assess the effects of $FeSO_4$, $ZnSO_4$ and their combination treatments were formulated in such a way. The treatment consisted of individual application of $FeSO_4$ (100 and 200 kg/ha) and $ZnSO_4$ at 50 kg/ha. The other treatments details were as in Table 2 and adopted to the ratoon crop of sugarcane variety Co.419.

After harvest, the cane juice samples were analysed as per Horne's dry Lead sub acetate Method (Meadechen, 1977) before feeding to the instrument. The juice and top third to 6th leaf sheath samples were analysed for total Fe and Zn content.

RESULTS AND DISCUSSION

The results indicate that soil application of $FeSO_4$ at 100 kg/ha resulted in increased yield of 67.5 t/ha over NPK treated control. Similar results were reported by Kumerasan *et al.* (1985) for sugarcane crop. Two foliar sprays (45 and 90 days) of $FeSO_4$ at 1% were found to be better than one foliar spray four times (45, 60, 75 and 90 days) in relation to yield.

Table 2. Cane yield, DTPA-Fe and Zn in post-harvest soil, juice quality, total Fe and Zn in juice and total Fe amd Zn in 3rd-6th leaf sheaths at harvest (Mean of four replications)

Sl. No.	Treatment	Yield (t/ha)	Post-harvest soil		Juice		Juice		3rd 6th leaf sheath	
			Fe (ppm)	Zn (ppm)	Brix	Sucrose %	Total Fe (ppm)	Total Zn (ppm)	Total Fe (ppm)	Total Zn (ppm)
1.	NPK alone (control)	88.0	6.39	1.08	17.14	14.83	46	0.98	510	25.2
2.	100 kg $FeSO_4$ / ha	120.8	6.67	1.17	16.14	13.37	74	0.75	540	25.9
3.	200 kg $FeSO_4$ / ha	133.4	6.67	1.27	17.64	14.85	87	1.25	800	28.0
4.	1.0% $FeSO_4$ foliar apray on 30th, 50th, 70th & 90th days	96.9	6.53	1.45	15.94	13.84	65	1.61	520	30.8
5.	2.0% $FeSO_4$ foliar apray on 30th, 50th, 70th & 90th days	104.3	6.25	0.65	16.74	14.27	78	0.78	580	28.7
6.	50 kg $ZnSO_4$ / ha	108.8	6.39	1.97	17.44	14.85	63	1.68	520	32.9
7.	0.5% $FeSO_4$ foliar apray on 30th, 50th, 70th & 90th days	84.4	6.25	1.21	19.76	17.83	86	1.78	410	30.8
8.	100 kg $FeSO_4$ + 50 kg $ZnSO_4$ per ha	110.8	6.39	2.04	16.54	14.91	63	2.23	530	28.7
	C.D.	25.7	NS + Pooled samples	0.74	-	-	25	0.47	100	2.0

Initial soils : Available Zn - 1.50 ppm, Fe.- 6.0 ppm

In the juice samples, Fe content varied significantly with the treatments. Iron content increased through soil application and foliar spray of 2% $FeSO_4$.

The data on cane yield of second crop revealed that maximum yield was obtained with 200 kg $FeSo_4$/ha soil application followed by 100 kg $FeSO_4$/ha. These results are in confirmity with the findings indicated in the Annual Report (Anonymous, 1984) of Adhoc scheme on causes and correction of chlorosis in sugarcane. Though $ZnSO_4$ when applied separately had no influence over control, application of $ZnSo_4$/ha at 50 kg/ha along with 100 kg $FeSO_4$/ha increased the yield significantly over control. Similar results were reported by Pannu *et al.* (1986).

The results on juice quality parameters indicated that sucrose content in cane was increased by foliar spray of 0.5% $ZnSO_4$ four times (30, 50, 70 and 90 days after planting) Soil application of $FeSO_4$ and foliar spray of $ZnSO_4$ increased the Fe content of juice significantly over control. Zinc content was markedly increased by soil application and foliar spray of $ZnSO_4$ and combined application of $ZnSO_4$ and $FeSO_4$.

In the leaf sheath samples (3rd to 6th leaf from top) the Fe the Zn contents were appreciably increased by the addition of the respective nutrients to soil and also on the foliage.

REFERENCES

ANONYMOUS. 1984. ICAR. Final Report of Ad-hoc scheme on causes and correction of chlorosis in sugarcane, turmeric jasmine and crossandra. 1981-84. TNAU, Coimbatore.

KUMERASAN, K.R., SAVITHRI, P., MANICKAM, T.S.and KOTHANDARAMAN, G.V. and DANIEL, G. 1985. Effect of application of press mud, $ZnSO_4$ and $FeSO_4$ on yield and quality of sugarcane. Madras agric.J. 72:701-705.

LINDSAY, W.L. and NORVELL, W.A. 1978. Develop ment of DTPA soil test for Zn, Fe, Mn and Cu. Soil Sci.Soc.Amer.Proc. 43:421-428.

PANNU, B.S., VERMA, K.S. and DANG, Y.P. 1986. Effect of N, P and Zn application on the yield and quality of sugarcane. Indian Sugar Crops J. 12:8-11.

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COMPONENT ANALYSIS FOR FODDER YIELD IN COWPEA

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ABSTRACT

Sixteen strains of cowpea were evaluated for six fodder characters, wide range of variability was observed for plant height, green fodder yield and number of leaves. Heritability and genetic advance as percentageof mean were also high for these traits. Positive and significant genotypic correlation was noted between green fodder yield with plant height, number of leaves, leaf let length and stem girth. Pathco-efficient analysis revealed that number of leaves, leaflet length and stem girth showed high positivie direct effect on greenfodder yield. It is suggested that selection of plants with thick stem and more number of leaves will improve green fodder yield in cowpea.

Cowpea is grown for both grain and fodder, exhibiting wide range of variability. It can be raised throughout the year for fodder in Tamil Nadu and can be grown with maize as mixture crop. Information on the nature and magnitude of variability, genetic associations among fodder yield attributes, direct and indirect effects of different fodder characters are required to initiate an effective breeding programme. The present, study, therefore was undertaken to obtain information on the above aspects so that it may be utilized in breeding programmes.