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A STUDY ON THE EFFECT OF SEEDLING ROOT DIPPING ON YIELD OF AGED SEEDLINGS OF IR 20 IN COMPARISON WITH NORMAL SEEDLINGS

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Progressive reduction of grain yield was observed with seedling age at transplanting. Among different seedling root dippings, root dip with zinc oxide suspension to a limited extent compensated the yield reduction with aged seedlings.

Crop variety, timely planting; fertilizer, water management and plant protection play a vital role in crop production. Almost 75 per cent of the area under transplanted rice suffers due to inadequacy of water (Barber, 1970). Farmers are forced to retain the seedlings in the nursery because of the late receipt of freshes in rivers and canals, unavailability of labour etc. This delayed planting result in reduced yields.

Different seedling root dippings were found to increase the yield of normal seedlings in rice. However information available on the effect of seedling root dippings under delayed conditions of planting is meagre. So an attempt has been made in this direction in this study.

MATERIAL AND METHODS

A field experiment was conducted with IR 20 paddy at the Tamil Nadu Agricultural University wetlands in summer and *kharif* seasons of 1981. In a split plot design replicated thrice, three age of seedlings (25, 35 and 45 days) were tried with eight seedling root dippings in main and sub plots, respectively.

1. Superphosphate slurry (S_1) dipping:- 30kg P_2O_5 per hectare in the form of super phosphate was made into slurry with soil and water in 1:4:5 proportion and seedling root sweredip ped in this before transplanting.

2. Gypsum slurry dipping (S_2) :- Seedling roots were dipped in gypsum sluriy prepared at the rate of 100 kg gypsum mixed with 400 kg soil 500 litres of water per hectare.

3. Dursban + Urea solution dipping (S_3) :- Seedling root dipping for 20 minutes in urea and Dursban (50 litres of water + 100 ml of Dursban + 500 g of urea per hectare) solution.

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4. Dursban dipping (S_4) :- Uprooted seedlings were kept overnight (about 12 hours) in 0.02% Dursban solution and then planted.

5. Zinc oxide suspension dipping (S_5) :- Regular wet bed seedling were root dipped in two percent zinc oxide suspension for 12 hours.

6. Ferrous sulphate suspension dipping (S_6) :- Polled out seedling roots were dipped in two per cent ferrous sulphate suspension for 12 hours.

7. Combination dipping (S_7) :- Seedling roots were dipped in Dursban (0 02%) + Urea + Zinc oxide + Ferrous sulphate (2%) suspension for 12 hours.

8 No root dipping (S_8) :-

RESULTS AND DISCUSSION

Grain yield : The grain yield tended to decrease seedling age at transplanting. Pooled analysis of grain yield data for both the seasons is presented in Table 1.

The grain yield when seedlings were root dipped in Zinc oxide suspension was higher than at other root dippings. The next best yield was with urea mixed Dursban solution root dip. This is a reflection of increase in nitrogen uptake, productive tillers, more filled grains per panicle and lower sterility. Balal (1978) noticed 10 to 20 per cent increased yield due to zinc application as two per cent suspension to the roots. This is also in accordance with the observations of Krishnamurthy *et al.* (1976). Two per cent ferrous sulphate suspension reduced grain yield in both the seasons than control. Venkatasubramaniyam and Mehta (1974) and Brar and Sekhon (1979) reported similar reduction in yield with root dipping in $FeSO_4$ solution. The antagonistic effect of iron on phosphorus and zinc uptake may be the possible reason for such setback. Superphosphate slurry root dip produced comparable yield with that of control though, 50 per cent phosporus dose was curtailed. Katyal (1978) and Singh *et al.* (1977) recorded similar results. This may be due to placement of phosphorus in the feeding zone which in turn increase the 'P' utilisation efficiency. There was no interaction between age of seedlings and seedling root dip treatment even though both influenced the grain yield individually.

Straw yield : Straw yield followed the same pattern of response as that of grain yield where age of seedlings and seedling root dippings influenced the yield during both the seasons (Table 2).

Here again, 25 days seedling recorded higher straw yield of 6416 kg/ha and 5546 kg/ha in summer and *Kharif* respectively followed by 35 and 45 days old seedlings. Increase in straw yield due to optimum age of planting was observed by Enyi (1963). Increased plant height and tiller number observed with this treatment might have contributed to the increased straw yield of 25 days old seedlings, but of all seedling root dipping treatments zinc oxide suspension root dip registered

higher straw yield in both the seasons and there was no interaction between age of seedlings and seedling root dippings.

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Table - 1 : Effect of seedling root dippings root dippings on grain yield (kg/ha) (Pooled data for summer and kharif).

	Age of seedlings (days)			Mean
	25	35	45	
Root dippings :				
S_1	5055	4651	4340	4682
S_2	4813	4674	4024	4503
S_3	5106	4756	4430	4764
S_4	4949	4708	4258	4638
S_5	5435	4979	4596	5003
S_6	5041	4603	4012	4552
S_7	4688	4243	4053	4328
S_8	5031	4685	4311	4675
Mean	5014	4662	4253	

C.D Ages 72.0; Root dippings (s) 318.9; Season (Se) 159.4; A at S N.S; S at A N.S

Table 2 Effect of seedling root dippings on straw yield (kh/ha)

	Summer				Kharif			
	25 days	35 days	45 days	Mean	25 days	35 days	45 days	Mean
Root dippings :								
S_1	6405	6165	5977	6169	5586	5440	5239	5421
S_2	6330	6028	5806	6049	5664	5331	5239	5408
S_3	6435	5940	6086	6153	5737	5401	5238	5458
S_4	6580	6223	6073	6292	5396	5298	5233	5409
S_5	6710	6398	6154	6420	5602	5451	5390	5483
S_6	6296	6049	5844	6030	5537	5358	5200	5364
S_7	6147	5908	5754	5936	5295	4948	5216	5153
S_8	6424	6140	5953	6152	5566	5360	5138	5354
Mean	6415	6091	5955		5546	5324	5236	

	C.D.	C.D.
Ages	60.2	57.9
Root dippings (s)	170.6	120.5
A at S	N.S.	N.S.
S at A	N.S.	N.S.