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GENOTYPE ENVIRONMENT INTERACTION IN RAGI (*Eleusine coracana* GAERTN)

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Fourteen genotypes of ragi were investigated in terms of yield and its associated characters. The general association of yield with drymatter production was brought out Genotypes CO 7, IDS 1 and Indaf 5 deviated indicating their susceptibility to environment. The yield and 1000-seed weight relationship presented a wide scatter. The seed weight before sowing and seed weight after harvest differed widely in certain genotypes. HPB 7 6 and PES 172 improved their 1000-seed weight largely whereas Indaf 5 presented a decline. Only HR 222 showed resistance to environment interaction without any change in 1000-seed weight. Thus Genotype x Environment interaction is evident in the dry matter production and 1000 seed weight.

Ragi is a cosmopolitan millet grown all over India throughout the year in all types of soils. The crop is grown from sea level to an altitude of 1850 to 2100 metres. It is very widely distributed occupying a major component in cropping area in Karnataka, Tamil Nadu, Maharasntra and Andhra Pradesh. Being grown under verying environment a wide variability in the yield performance is observed. The solar radiation, temperature, water and nutrients for on the major environmental inputs and in response to those inputs the verious physiological processes in the plants are modified. The variability in environmental parameters alter the rates of synthetic processes in the plant. The present investigation was taken up to study the trends in total drymatter production, yield and 1000-seed weight in the various genotypes grown under the existing condition in Coimbatore and to understand Genotype x Environment interaction on these parameters

MATERIALS AND METHODS

Fourteen genotypes of ragi were utilized for the studies The genotypes represent the seeds produced under varying climatic conditions located in various parts of the country. The crop was raised during 1980-81 by the Department of Crop physiology, Tamil Nadu Agricultural University, Coimbatore 3. between May 30 and September 27, 1980 cropping period. The trial was conducted conforming 'Randomised Block Design' providing three replications. Ten plants were taken at random from

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Table: Yield, Drymatter production, 1000-seed weight before sowing and after hervest.

Genotypes	Yield g/plant	DMP g/plant	1000 seed weight (g)	
			Before sowing	After harvest
CO 11	14.17	64 74	2.73	3.15
PES 172	13.97	63.41	2.53	3.04
PR 202	13.95	64.22	3 08	3.23
CO 7	13 87	61 81	2.95	3.25
HPB 7-6	13.15	62.22	2.82	3.92
HR 344	13.01	60.11	2.71	3.08
HR 374	12 80	60.60	2 99	3 25
MR 5-6	12.26	58.80	3.22	2.95
HR 222	12.15	58.34	2.90	2.86
NR 852	12.10	57.73	3.17	2.70
IDS 1	11.68	55.45	2.53	2.63
Indaf 5	11.46	57.83	3.16	2.53
HR 23A	10.81	55 89	2 60	2.77
HR 91B	10.72	55.99	2.63	2.94

Bar Diagram : Yield

a			a				c		c	e	e		
1	2	3	4	5	6	7	8	9	10	11	12	13	14
				b		b			d	d		f	f

each replication. The final yield, total drymatter production, 100-seed weight befor planting and after harvest were recorded.

RESULTS AND DISCUSSION

The data on yield, total drymatter production and 100-seed weight are presented in the following Table.

The drymatter production (DMP) varied from 55.99 g/plant to 64.74 g/plant while the yield variation was between 10.72 g/plant and 14.17 g/plant. The yield was positively associated with total drymatter production with a high degree of correlation ($r = +0.959$) Despite high correlation, CO 7, IDS 1 and Indaf 5 were observed to be removed from the line of association. Presumably, these genotypes that showed deviation were influenced by marked Genotype x Environment interaction. The close relation of the drymatter production after flowering to grain yield in two wheat cultivars was reported by Srivastava and Mehotra (1980). Sahu and Murthy (1975) observed direct association of yield with drymatter production in rice.

The yield and 1000-seed weight relationship presented a wide scattet and the correlation was +0.65. Normally it is expected that the 1000-seed weight as an initial capital will have its influence on the yield. However, deviations occur due to Genotype x Environment interactions. The values 1000-seed weight at the sowing time and those after harvest were at variance and this difference was probably the expression of Genotype x Environment interaction. The scatter diagram showed the susceptibility of certain genotypes to the impact of environmental paramenters, when the 1000-seed weight at the time of harvest was plotted against the 1000-seed weight at sowing time.

The normally expected relationship namely 1000-seed weight to have a high degree of correlation with yield was not observed. The 'plots' showed a wide scatter pointing out variability in the seed weight probably due to duration, of thec rop and above all fhe distinctn-ess of the genotype manifesting sluggish accimatisation to the environment. This may also be due to genetic history geographical barrier and inheritance characters derived from their respective parents. The genotypes HBP 7-6 and PES 172 exhibited increased seed weight in the harvested produce compared to the sown seed. While Indaf 5 showed decline Eight other genotypes showed increase in seed weight while two genotypes showed credutoin in seed weight. One genotype, viz., HR 222 showed no change in this respect. These trends indicate the existence environment interaction in of genotype x the parameters studied.

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