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STUDIES ON VARIABILITY, HERITABILITY & GENETIC ADVANCE IN TMATO (*Lycopersicon esculentum*)

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The present investigation of tomato was under taken in a widely divergent collecction of 20 varieties for finding out the renge of genotypic and phenotypic variability hetiability and genitic advance present for important characters. The experiment was worked out in randomized block design with four replications at Vegetable Resea4ch Station, Kalyanpur, Kanpur during 1996-97. Seedlings in each treatment were transplanted in 3 rows with 3·75 meters lenght of bed. Twelve compititive plants were randomly selected in each treatment for recording observations on different characters.

The seed pulp ratio revealed 54·07 percent gcv. whereas weight of fruit, locule number of fruits/plant showed 53·09, 48·17 and 46· 36 per cent gcv. respectively. The results obtained in this study indicated that material undertaden might offer good except a few e.g.; acidity, days to ripening and total soluble solids content. The highest herritability was recorded for seed pulp ratio and it was foun lowers moderated for days to flower. The remainging characters shoed to high heritability estimates. The expected genetic advance varied from 8·52 (acidity) to 111·8 per cen (Ssed pulp ratio). similar results have also been reported in prenions studies (1) In the present studies number of fruits/plant, locule number, seed pulp ratio and weight of fruit had higher highter heritability estimates with higher genetic gain. These results are in

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confirmity to those those of larling studies (2). It there fore, appears that selection for afreraid characters should be effective. Becouse while moning selections. Heritability alongwith genetic advance is more useful than heritability alone. High heritability with high expected genetic gain showed. the most effective contribution for selection also in prinion to parts. (3 & 4) It was found that days to flower. days to naturity, total soluble solids and acidtity showed high heritability with comparatively low genetic gain, indicating that direct selection for these characters would not be beneficial.

Table–1 : General mean, range and estimates of components of variances in tomato

Character	Range	Mean	Variance		
			Phenotypic	Genotypic	Error
Days to Flower	18·8 – 33·5	25·09	18·44	11·56	6·88
Days to 30% fruit Ripening	69·2 – 95·8	81·67	72·80	48·60	24·20
Number of fruits/branch	2·8 – 6·1	4·35	1·21	0·78	0·44
Number of fruit/plant	10·7 – 58·9	25·19	141·90	136·49	5·41
Number of locule/fruit	2·0 – 12·2	6·04	10·03	8·51	1·52
Seed Pulp Ratio	90·7 – 609·0	168·7	11591·11	1156·39	44·72
Total Soluble Solids (%)	6·1 – 7·9	7·11	0·42	0·39	0·03
Acidity (mg/100 g of Juice)	150·0 – 644·0	331·9	230·54	208·17	22·37
Ascorbic acid (mg/100 g of juice)	24·7 – 43·0	33·57	26·63	26·02	0·61
Storage life at room temp. (days)	13·2 – 27·3	17·90	12·66	11·40	1·26
Weight of 20 fruits (kg)	0·8 – 5·8	1·94	1·252	1·067	0·185
Yield/plant (kg)	1·3 – 2·5	1·81	0·166	0·141	0·025

Table–2 : Genotypic and Phenotypic coefficient of variation, heritability and genetic advance in tomato

Characters	Coefficient of variation		Heritability (%)	Genetic advance (%)
	Phenotypic	Genotypic		
Days to flower	17·09	13·55	62·68	22·12
Days to 30% fruit ripening	10·44	8·53	66·75	14·36
Number of fruits/branch	25·28	20·22	64·00	33·33
Number of fruits/plant	47·28	46·36	96·18	93·68
Number of locules/fruit	52·31	48·17	84·84	91·72
Seed pulp ratio	54·18	54·07	99·61	111·18
Total Soluble Solids (%)	9·00	8·72	92·85	17·58
Acidity (mg/100 g of juice)	4·58	4·35	90·27	8·52
Ascorbic acid (mg/100 g of juice)	15·37	15·19	97·70	30·92
Storage life at room temp. (days)	19·83	18·82	90·04	36·92
Weight of 20 fruits (kg)	57·12	93·09	85·22	101·54
Yield Plant (kg)	22·09	20·4	84·93	39·77

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