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CORRELATION BETWEEN YIELD AND YIELD PARAMETERS IN RADISH (*RAPHANUS SATIVUS*)

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ABSTRACT

Among the root crops, radish (Raphanus sativus L.) is one of the important vegetables grown as an off-season during summer in mid to high hills and as a main crop during winter in plains and foothills. Its cultivation has been extended throughout India due to development of promising climate specific varieties. The tender roots of radish are used as vegetable. Since the resultant radish yield is the effect of interactions of various independent plant characters, a study was, therefore, undertaken to correlate the influence of various yield attributes with yield of radish

MATERIAL AND METHODS

The experiment was conducted, during 1995-96 and 1996-97, at Horticultural Research Station at Kandaghat in Solan District of HP. The soil of experimental plot was snady loam having 0.18% available nitrogen, 7.74 and 22.56 ppm available phosphorus ad potassium, respectively. The treatments consisting of five nitrogen levels (0, 40, 80, 120 and 160 kg/ha) and four biofertilizer inoculations (Control, Azotobacter, Azospirillum and Azotobacter + Azospirillum) were arranged in complete randomized block design wit three replication. The plants of radish cultivar Japanees white were maintained at a spacing of 30 cm between row and 10 cm between plants with a plot size of 10 sq m. Ten plants from each treatment were selected, uprooted and washed with running water. The interrelationships amongst eleven characters viz., shoot height, root length, root diameter, No of leaves/plant, fresh weight of root and shoot and dry biomass, Leaf area Index (LAI), total nitrogen uptake, total soluble solids (TSS) and ascorbic acid content were worked out. The data of both years was pooled and simple correlation coefficients wee worked out a per procedure explained by Snedecor ad Cochran (1968).

RESULTS AND DISCUSSION

Data pertaining to simple correlation in Table 1 revealed that yield attributes exhibited significant and positive correlation with radish yield. The fresh weight of shoot and root were positively correlated with all the characters under study except ascorbic acid contents, which showed significant negative correlation. Radish yield exhibited significant high positive correlation with shoot height, root length, root diameter, No of leaves, fresh weight of shoot and root, dry biomas/plant, LAI, total nitrogen uptake but was negatively correlated with ascorbic acid contents. Similarly the dry biomass also showed positive correlation with all the characters except ascorbic acid contents. These results have generally been in conformity with those of earlier workers. Ndang and Sema (1999) reported that maximum radish yield as obtained was due to higher fresh weight, length and thickness of root and there was significant positive correlation.

Root length and diameter, which are the yield contributing character revealed significant positive correlation with all the characters except ascorbic acid content. However, the correlation was non significant in care of root length and ascorbic acid contents. The number of leaves, responsible for the synthesis of food material were found positively correlated with al the characters. However, LAI revealed highly significant negative correlation (r = - 0.559) with ascorbic acid content. The quality parameters like total soluble solids (TSS) were found positively correlated with all the characters but the correlation with ascorbic acid content was negative (r = - 0.546). Contrary to correlation of TSS, the interrelationship of ascorbic acid was negatively correlated with all the characters under study. Mishra and Singh (1985) and Vijay and Manohar (1990) also reported similar interrelationship of yield and yield component in okra. This study provides information that all the yield parameters are positively and significantly correlated with radish yield and hence these are most important yield contributing characters.

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Table 1. Coefficient of correlation between various growth and quality parameters in radish.

Attributes	Shoot height (cm)	Root length (cm)	Root Diameter (cm)	No of leaves/ plant	Shoot fresh weight (g)	Root fresh weight (g)	Dry biomass (g)	LAI	Total N uptake (kg/ha)	TSS (%)	Ascorbic Acid content (mg/100g)
	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}
X_2	0.667**										
X_3	0.819**	0.624**									
X_4	0.831**	0.644**	0.779**								
X_5	0.845**	0.661**	0.890**	0.831**							
X_6	0.822**	0.643**	0.858**	0.854**	0.950**						
X_7	0.845**	0.612**	0.804**	0.864**	0.906**	0.940**					
X_8	0.912**	0.674**	0.826**	0.874**	0.923**	0.909**	0.936**				
X_9	0.814**	0.654**	0.872**	0.858**	0.964**	0.981**	0.952**	0.936**			
X_{10}	0.848**	0.385*	0.449*	0.424*	0.477*	0.508*	0.483**	0.506*	0.503*		
X_{11}	-0.642**	-0.286	-0.594*	-0.524*	-0.540*	-0.523*	-0.575*	-0.599*	0.-46*	-0.446*	
X_{12}	0.875**	0.667**	0.833**	0.860**	0.947**	0.957**	0.937**	0.946**	0.964**	0.539*	- 0.556*

X_{12}= Radish yield

* and ** - Significant at 5% and 1%