GAU Res. J. 1998, 23 (2) : 100-102

Correlation Studies in Sunflower*

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The improvement in productivity and quality of sunflower is governed by many factors. The mutual association of growth and yield contributing parameters can particularly provide useful information to understand thoroughly the relationship between yield and yield attributes under a given situation. With this view, a field experiment was conducted during *rabi* seasons of 1993-94 and 1994-95 with three levels each of irrigation schedule (0.6, 0.8 and 1.0 IW/CPE ratios), nitrogen (60, 80 and 100 kg ha^{-1}) and phosphorus (30, 40 and 50 kg ha^{-1}) in a split plot design at College Farm, Navsari (Gujarat). Observations were recorded on different random plants in respect of growth (plant height, leaf area index and stem girth) and yield (number of seed, filled seed per cent, head diameter, seed yield per head and seed index) attributes.

Correlation coefficient (r) between the seed yield and growth and yield contributing characters (independent variables) were studied on the linear regression $Y = a + bX$, where Y = expected seed yield for the level of any other factor 'X' (Croxton and Cowden, 1964).

It has been observed that an appreciable positive significant correlation was found between seed yield and all the growth and yield attributing characters (Table 1) during both the years.

Optimum moisture regime and nitrogen level leads to favourable effect on seed weight per head by increasing the number of seeds and seed index. In the present study, seed weight per head (r = 0.9783 in 1994 and 0.9809 in 1995), seed index (r = 0.9732 in 1994 and 0.9728 in 1995) and number of seeds (r = 0.9727 in 1994 and 0.9816 in 1995) established highly significant positive correlation with seed yield during both the years.

Plant height, stem girth and leaf area index gave an indication of better growth and development of crop plants, which ultimately strengthened the yield attributes and consequently resulted in higher seed yield. All the three growth characters exhibited higher positive correlation with seed yield during both the years of present investigation.

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TABLE 1

Constants of regression line of the yield 'Y' on other individual yield attributes and coefficient of correlation and regression equation during 1993-94 and 1994-95.

Character	1993-94				1994-95			
	a	b	r	100 R^2	a	b	r	100 R^2
Plant height	-1188.610	17.825	0.8936	79.86	-10081.401	16.698	0.9040	81.73
LAI	311.190	480.807	0.9575	91.68	301.592	421.868	0.9663	93.36
Stem girth	82.176	337.368	0.9317	86.81	179.866	308.928	0.9280	86.13
Head diameter	75.103	137.835	0.9496	90.18	158.819	131.804	0.9240	85.38
No. of seeds/head	-661.692	3.741	0.9727	94.62	-281.627	3.298	0.9816	96.36
Filled seed (%)	-1053.825	43.853	0.9073	82.31	-1192.067	39.786	0.9430	88.92
Seed index	-2098.304	71.456	0.9732	94.71	-1580.694	64.363	0.9728	94.63
Seed weight/head (g)	672.899	49.026	0.9783	95.70	697.223	45.089	0.9809	96.22

Note : r value signifcant at 1 per cent level of probability in all cases.

Head diameter and filled seeds per cent also indicated significant positive correlation with seed yield during both the years as they have direct impact on number of seeds and seed index, and ultimately on seed yield/head. These findings are in comformity with Sindhu and Bains (1980) and Pathak *et al.* (1983).

(Received on 18th Sept., 1996)

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