PATH COEFFICIENT ANALYSIS IN LENTIL

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Lentil is an important pulse crop widely grown in India during winter season under limited moisture and rainfed condition. A knowledge of the association of quantitative characters, contributing towards yield will be of immense practical interest to the plant breeder to ensure efficient selections for desirable plant type. Accordingly, the present study was taken up using path-coefficient analysis to collect the information on yield and its component traits in lentil to ensure better prediction and gain during selection for ideal plant type.

Thirty six diverse genotypes of lentil (*Lens esculantus* L.) were grown in a randomized block design in three replications. Each genotype in a replication had 2 row of 5m length with 30 × 10 cm spacing. Data were recorded on randomly selected 10 competitive plants in each replication for seven quantitive and one qualitative traits (Table 1). The mean values of each trait was used for statistical analysis. The correlation and path coefficients were obtained according to the procedure proposed by Al-Jibouri *et al.* (1959) and Dewey and Lu (1959).

In the present study, grain yield showed highly significant and positive correlations with number of clusters per plant, number of pods per plant, number of primary branches per plant, plant height and days to flowering and are in accordance with earlier reports in lentil (Balyan and Singh, 1986; Baidya *et al.*, 1988; Ramgiri *et al.*, 1989; Biswas and Das, 1990; Kumar and Bajpai, 1992) grain yield appeared to be weak but positively correlated with 100 grain weight and protein content. However, increase in number of pod clusters per plant, number of pods per plant and number of primary branches per plant may increase the grain yield in lentil. The path coefficient analysis using yield as dependent variable and other characters as independent variables

was carried out (Table 1). Number of pod clusters per plant, number of pods per plant and number of primary

Table 1. Path coefficient analysis for grain yield and its component traits in lentil

Characters	Correlation with yield per plant	days to flowering	Plant height (cm)	No. of primary branches	No. of pods/ plant	No. of pod clusters/ plant	100 grain weight (g)	Protein content
Days to flowering	0.3251**	–0.0269	–0.0047	–0.0536	–0.1350	0.1691	–0.0489	–0.0153
Plant height (cm)	0.3957**	–0.0006	–0.2013	0.0384	0.1796	0.0355	0.0328	–0.0085
No. of primary branches plant	0.6582**	0.0094	0.0508	0.1520	0.2435	0.2781	–0.0151	0.0411
No. of pods/ plant	0.7684**	0.0067	–0.1071	0.0684	0.5407	0.2779	–0.0028	–0.0154
No. of pods cluster/plant	0.8526**	0.0064	–0.1020	0.0602	0.2143	0.7012	–0.283	0.0008
100 grain weight (g)	0.2929	0.0175	0.0881	–0.0307	0.0204	0.2643	–0.0750	0.0083
Protein content	0.0033	0.0053	–0.0223	–0.0811	0.1084	–0.0074	0.0081	–0.0070

**P = 0.01   Residual effect : 0.1838
Underlined figures denote direct effects

branches per plant showed considerable direct and positive effect towards grainyield. Other studies (Nanda and Pandya, 1980; Sarwar *et al.*, 1984; Elassa *et al.*, 1987; Pandey *et al.*, 1992) substantiate this finding. Results further revealed that days to flowering had negative direct effect on grain yield but it contribute indirectly through number of pod clusters per plant. Similarly plant height had negative direct effect but indirectly it contributes positively through all the characters except days to maturity and protein content. Number of primary branches per plant were more effective indirectly through number of pod clusters per plant and number of pods per plant. Indirect effects of number of pods per plant through number of pod clusters per plants was high in comparison to other characters. Number of pod clusters per plant contributed maximum towards grain yield directly and indirectly through number of pods per plant. It is noteworthy that threse two traits were closely associated with grain yield per plant, hence, it is desirable to give more emphasis while selecting an ideal plant type to ensure high yield in lentil crop. In the present study 100 grain weight and protein content had non significant association

with yield directly but indirectly through number of pod clusters per plant and number of pods per plant contributed towards yield.

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