

Studies on character association in fenugreek (*Trigonella foenum-graecum* L.)

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Abstract

The investigation was carried out with twelve genotypes of fenugreek obtained from different coordinating centres of AICRP on Spices at Regional Agricultural Research Station, Lam during 1998-1999, 1999-2000, 2000-2001 and 2001-2002 to estimate the correlation coefficients for yield and yield components. The mean data over four years was subjected to statistical analysis for estimating correlation coefficients both at phenotypic and genotypic level. In general the phenotypic correlation coefficients were smaller than genotypic correlation coefficients for majority of the characters. Seed yield showed highly significant positive association with plant height (0.907** and 0.967**), number of pods per plant (0.876** and 0.952**), pod length (0.839** and 1.005**) and number of seeds per pod (0.905** and 0.984**) both at phenotypic and genotypic level, respectively. Among the yield component characters plant height with number of pods per plant (0.961** and 0.971**), pod length (0.818** and 0.939**), number of seeds per pod (0.982 and 0.994); number of pods per plant with pod length (0.743**, 0.932**), number of seeds per pod (0.979**, 0.994**) and pod length with number of seeds per pod (0.815**, 0.979**) showed significant positive association both at phenotypic and genotypic level.

The phenotypic and genotypic correlation studied showed that association of seed yield with plant height, number of pods per plant, pod length and number of seeds per pod was appreciable, indicating the importance of these traits as components for seed yield.

Key words: Yield components, character association, Fenugreek

Introduction

Yield is a complex character, which is highly influenced by the environment. Selection based on yield alone will limit the improvement, whereas the yield component characters are less complex in inheritance and influenced by the environment to a lesser extent. Thus, effective improvement in yield may be brought about through selection of yield component characters. Yield component characters show associations among

themselves and with yield. Selection may limit genetic advance if unfavorable associations are present among the desired yield attributes. In order to initiate an effective selection programme for the genetic improvement in yield of fenugreek it is essential to know the importance as well as degree of association of various quantitative traits. The present study was undertaken to find out the association between yield and yield components in fenugreek through correlation analysis.

Material and methods

Twelve diverse varieties of fenugreek obtained from different coordinating centers of AICRP on Spices under multi location testing were evaluated during rabi of 1998-99, 1999-2000, 2000-01 and 2001-2002 in a randomized block design with three replications at Regional Agricultural Research Station, Lam. Plot size consisted of four rows of 5 meters length with 30x10 cm spacing. The characters included for the present study are plant height (cm), primary branches per plant, pods per plant, pod length (cm) and seed yield (q ha⁻¹). Five competitive plants at random were selected for recording the data. The data collected over four years was subjected to statistical analysis individually year wise as well as pooled over four years for estimating correlation coefficients. The analysis of variance for the design was carried out following Panse and Sukhatme (1978). Correlation coefficients were estimated as described by Dewey and Lu (1959).

Results and discussion

The genotypic and phenotypic correlation coefficients between yield and yield component characters are presented in Table 1. The present study indicated that seed

yield showed highly significant positive association with plant height (0.907** and 0.967**), number of pods per plant (0.876** and 0.952**), pod length (0.839** and 1.005**) and number of seeds per pod (0.905** and 0.984**) both at phenotypic and genotypic level, respectively. Mehta *et al.* (1982) reported positive association of seed yield with plant height, number of pods per plant and number of seeds per pod at genotypic level.

Plant height exhibited significant positive association with number of pods per plant (0.961** and 0.976**), pod length (0.818** and 0.939**) and number of seeds per pod (0.982** and 0.994**) both at phenotypic and genotypic level, respectively. Positive association of plant height with number of pods per plant and number of seeds per pod was reported by Mehta *et al.* (1982) in their study.

Number of branches per plant showed non-significant positive association both at phenotypic and genotypic level for all the characters including seed yield. Contrary to the present findings Mehta *et al.* (1982) reported high positive association of number of branches per plant with number of pods per plant and seed yield, while negative

Table 1. Phenotypic and genotypic correlation coefficients between yield and yield components in fenugreek.

Character		Plant Height (cm)	No. of branches per plant	No. of pods per plant	Length of pod (cm)	No. of seeds per pod	Seed yield (q ha ⁻¹)
Plant Height (cm)	Phenotypic	1.0	0.185	0.961**	0.818**	0.982**	0.907**
	Genotypic	1.0	-0.053	0.976**	0.939**	0.994**	0.967**
Branches per plant	Phenotypic		1.0	0.19	0.254	0.234	0.284
	Genotypic		1.0	0.027	-0.093	0.044	-0.037
Pods per plant	Phenotypic			1.0	0.743**	0.979**	0.876**
	Genotypic			1.0	0.932**	0.994**	0.952**
Length of pod (cm)	Phenotypic				1.0	0.815**	0.839**
	Genotypic				1.0	0.979**	1.005**
Seeds per pod	Phenotypic					1.0	0.905**
	Genotypic					1.0	0.984**
Seed yield (q ha ⁻¹)	Phenotypic						1.0
	Genotypic						1.0

(*, ** significant at 5% and 1% level of probability, respectively.)

association for number of seeds per pod. This may be due to the differences in the genotypes studied.

Number of pods per plant exhibited significant positive association with pod length (0.743** and 0.932**) and number of seeds per pod (0.979** and 0.994**) both at phenotypic and genotypic level, respectively. Mehta et al. (1982) reported non-significant negative association between number of pods per plant and number of seeds per pod, which is contrary to the present findings. Pod length showed significant positive association with number of seeds per pod (0.815** and 0.979**) both at phenotypic and genotypic level, respectively.

Thus, the character association analysis revealed that the plant height, number of pods

per plant, pod length and number of seeds per pod were found to have significant positive association with yield. Therefore, plant height, number of pods per plant, pod length and number of seeds per pod could be taken as selection criteria for achieving higher seed yield in fenugreek.

References

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