

EXPRESSION AND ASSOCIATION OF SPIKE CHARACTERS IN BLACK PEPPER

Pepper (*Piper nigrum* L.) is highly vulnerable to seasonal variation not only for yield but also for other characters particularly spike characters. Spike characters vary to a greater extent than foliage and berry characters. Besides, the effect of season, interactions of varieties with season have great influence on the expression of these characters. In this study, the stability of expression and association of spike length and developed berries/spike are examined.

Data on fifteen varieties (Table 1) over four seasons (1983-84 to 1986-87) at the Pepper Research Station, Panniyur were utilized for this study. The data were taken from ten plants under each variety planted in unreplicated rows. The plants were eight year old at the commencement of experiment. Analysis of variance, coefficient of variation and correlation coefficients were worked out as per Snedecor and Cochran (1968).

The varieties and seasons were significantly different at one per cent level for spike length and developed berries/spike. The variety Ceylon showed superiority over all other varieties, for spike length (Table 1). Karimunda Type I produced the shortest spike. Ceylon also produced the largest number of berries/spike and Taliparamba V, the lowest.

Expression of these characters were markedly influenced by seasons also (Table 2). Developed berries/spike were more prone to seasonal variation (CV=22.73%) than spike length (CV = 16.30%). The varieties varied greatly for their stability of expression over seasons (Table 1). Arakulam Munda showed remarkable stability over seasons for spike length (CV=3.2%) and moderate stability for developed berries/spike (CV=12.37). The varieties Ceylon, Karimunda I and Neelamundi II had considerable stability for spike length, but developed berries/spike was inconsistent to a considerable extent. Poonjarmunda for spike length and Karimunda I for developed berries/spike were the most unstable.

Correlation between spike length and developed berries/spike was not significant for varieties. But when seasonal and varietal effects were removed, correlation was significant at one per cent level for the remainder ($r=0.42$). This is because the favourable effect of spike length on berry production per spike was counteracted to some extent by the inherent weakness in some varieties for berry development.

The association of these characters for varieties was also worked out for individual seasons. The seasons influenced the extent and nature of such association. Significant correlation was obtained for only one season out of four. Even a negative trend was suggested, though not significant, for one season.

Seasonal stability of the expression and association of spike length and developed berries/spike was studied at Pepper Research Station, Panniyur based on the data available for fifteen varieties over four seasons (1983-84 to 1986-87). The effect of seasons on the expression of spike characters was great especially for developed berries/spike. Varieties themselves showed considerable variation in their susceptibility to seasons. Further, the varieties which had considerable stability over seasons in the expression of one character, in general, lacked stability in the other. Extent and nature of association of these characters also varied from season to season ($r = -0.24$ to $r = +0.64$).

Table 1

Mean values, varietal mean squares and coefficients of variation for spike length and developed berries per spike

S.No. Variety	Spike length (cm)	Developed berries/spike	Coefficient of variation over seasons (%)	
			Spike length	Developed berries/spike
1 Arakulam Munda	8.60	33.49	8.20	12.37
2 Balankotta Type I	9.39	28.52	9.01	17.43
3 Ceylon	10.75	41.28	9.56	32.06
4 Cheriyanakadan Type I	8.28	18.04	20.39	18.06
5 Karimunda Type I	6.70	29.11	9.94	43.83
6 Karivally	7.39	32.50	24.72	18.49
7 Kottanadan Type I	7.35	34.33	21.63	17.36
8 Kumbhakodi	7.71	35.92	13.62	19.87
9 Kuthiravaly Type I	7.64	37.47	22.61	10.13
10 Kuthiravaly Type II	7.65	37.96	18.24	24.29
11 Munda	7.84	31.26	11.84	8.26
12 Neelamundi Type II	7.80	27.11	5.43	27.00
13 Poonjarmunda	8.12	35.59	35.28	18.63
14 Taliparamba IV	7.28	27.13	19.70	27.86
15 Taliparamba V	7.59	14.27	19.26	36.28
Mean	8.01	30.93	16.30	22.13
SD	1.11	6.36		
CD (0.05)	1.59	9.08		
Variety mean square	3.86**	213.85**		

** Significant at 1% level

Table 2

Spike length, developed berries per spike and their correlation for four seasons

Sl. No.	Season	Spike length (cm)	Developed berries/spike	Correlation between the characters
1	1983—84	7.51	32.14	0.36
2	1984—85	9.15	29.42	0.64*
3	1985—86	8.34	35.71	0.40
4	1986—87	7.02	26.45	-0.24
Mean		8.01	30.93	
CD (0.05)		0.82	4.69	
SD		1.11	6.36	
Season mean square		13.16**	233.68**	

* Significant at 5% level

** Significant at 1% level

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Reference

Snedecor, G. W. and Cochran, W. G. 1968. *Statistical Method*. 6th ed. Oxford & IBH Publishing Co., New Delhi, pp 593.