Kanpur selection x Co 1 followed by K 74 x Co 1 and EC 68415 x Co 1. None of the hybrids recorded significant heterosis over better parent which indicated the absence of over dominance for this trait. Highest degree of positive heterosis over better parent was observed in the hybrid EC 100101 x K 2, though not significant. The present results confirmed that average x average or average x low cross combinations showed high heterosis indicating the possibilities of variety x inbred cross. This finding is in agreement with the earlier reports by Singh *et al.* (1984)

Mostly heterosis for oil content was in negative direction which could be due to over dominance of genes determining low oil content. This finding is in accordance with the results reported by Pathak *et al.* (1983). Only two hybrids, EC 93617 x Co 1 and EC 22237 x Co 1 recorded significant and positive heterosis for oil content.

The significant heterosis potentiality exhibited by a few hybrids in various characters studied indicated considerable breeding value. Gupta and Khanna (1982) recommended reciprocal recurrent selection since all types of gene action are present in sunflower. Hence, some of the superior cross combinations identified in this study could be utilised for a recurrent selection programme for the improvement of seed yield and oil content so as to obtain superior derivatives in sunflower.

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GRAIN YIELD STABILITY IN KODOMILLET (PASPALUM SCROBICULATUM L.) UNDER RAINFED CONDITIONS

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ABSTRACT

Eight promising kodomillet genotypes were studied to evaluate their stability for grain yield over three seasons. Genotype x environment interaction was found to be non-significant for grain yield. PSC-1 and IPS-147-1 were found stable for varying environments.

KEY WORDS : Kodomillet, Grain yield, stability.

Kodomillet (*Paspalum scrobiculatum* L.), one among the millets, is cultivated in a limited area with an average productivity as low as 180 kg per /ha under rainfed conditions in Andhra Pradesh. Research is limited in this crop. The varieties developed

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Table 1. Mean yield of genotypes in different seasons

Genotype	Grain yield (g/ha)		
	1983	1985	1986
PSC 1	10.21	4.09	10.19
PSC 3	10.72	2.37	7.87
PSC 4	6.63	4.42	6.13
PSC 9	10.88	3.13	10.20
PSC 11	9.51	5.94	7.03
PSC 12	12.36	3.90	10.68
IPS 147-1	9.95	4.57	9.26
Local	1.33	9.26	3.04
Mean	8.95	3.80	8.04
Environmental index	2.10	-3.14	1.13

should suit to the unpredictable rain fall situations. The present study was taken up to evaluate eight promising kodomillet genotypes for grain yield stability over such situations.

A stable genotype is one which performs well under a wide range of environments. The genetic effects are dependent on environmental effects. The failure of a genotype to express the same phenotypic performance when grown under different environments is reflected by GE interaction (Verma and Gill, 1975). This makes the ranking the isolating superior genotypes difficult. This can be overcome by selecting genotypes with a greater degree of stability of performance over a wide range of environments (Knight, 1970).

Table 2. Analysis of variance for stability parameters

Source of Variation	Degrees of freedom	Mean sum of squares
Genotypes	7	14.20*
Env. + (Geno. x Ev.)	16	11.15*
Env. (linear)	1	120.56*
Env. (non-linear)	2	60.55**
Geno. x Env. (linear)	7	5.49
Geno x Env. (non-linear)	14	4.15
Pooled deviation	8	2.41
Pooled error	42	2.55

* Significant at 0.05 level (against pooled deviation)
** Significant at 0.01 level (against pooled deviation)

The model suggested by Eberhart and Russell (1966) for computing stability parameters is used because of its wide application by the researchers. Their suggestion to identify an ideal variety which should have high mean, unit regression co-efficient and a small deviation from regression was considered to evaluate the genotypes under study.

MATERIALS AND METHODS

The experimental material consisting of seven genotypes along with a local cultivar was sown in a randomised block design with three replications at the Agricultural Research Station, Anantapur during Kharif seasons of 1983, 1985 and 1986 under rainfed conditions. Each plot with a net plot size of 2.4 x 2.85 m^2 consisted of ten rows spaced 30 cm apart with plant to plant distance of 7.5 cm. Fertilizers at the rate of 40 kg N/ha and 20 kg P_2O_5 / ha were applied. Nitrogen was applied in two split doses, half at sowing and the remaining at 30 days after sowing. Stability for grain yield was computed according to the model suggested by Eberhart and Russell (1966).

RESULTS AND DISCUSSION

The season Kharif 1985 as evidenced by negative environmental index value was considered to be a poor environment (Table 1). The differential effects of environments on genotypes were found to be significant as indicated by high significant environment (linear) mean sum of squares (Table 2). Genotype mean squares when tested against pooled deviation were found to be significant indicating independent nature of genetic systems in controlling stability parameters, whereas the non-significant G x E (linear) indicated that none of the cultivars differed in their response to environment stimuli. Similar non - significant interactions were reported for component characters by Bahl et al. (1980) in Bengalgram. Pooled

Table 3. Mean yields and parameters of stability of different genotype

Genotypes	Mean grain yield (g/ha)	bi	S^2di
PSC 12	8.98	1.6218	-0.014
PSC 1	8.15	1.2604	-0.010
PSC 9	8.07	1.5500	-0.015
IPS 147-1	7.94	1.0531	0.018
PSC 11	7.49	0.5518	0.098
PSC 3	6.99	1.5128	0.003
PSC 4	5.73	0.4172	0.022
Local	2.11	0.0009	-0.006
Mean	6.93		

deviation when tested against pooled error was found to be non significant. It suggested that it is possible to predict the performance of genotypes across the environments as was reported by Pandey (1983).

Based on the stability parameters worked out (Table 3) it can be said that, PSC 1 and IPS 147-1 with high mean performance were found to be the most stable genotypes.

PSC 9 and PSC 12 though possess high mean performance, are suitable to favourable environments because of their high responsiveness to environments, whereas PSC 11 with average mean performance can be suggested for poor environments owing to its low 'bi' values. Therefore, PSC 1, a high yielding stable genotype can be considered for recommendation to the zone.

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PHENOTYPIC STABILITY FOR SEED YIELD IN INDIAN RAPE

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ABSTRACT

The performance of 11 diverse promising genotypes of Indian rape (**Brassica campestris** L. var. toria) evaluated for genotype x environment interactions for seed yield in four environments revealed that the genotypes interacted considerably with environmental conditions. Both linear and non-linear components were significant. Genotypes Sangam, TGC 1, PT 507 B and T 9 performed better especially in high yielding environments. Out of these, except TGC 1, all had large deviation values from regression. Genotypes TLC 1, TK 6 and TH 63 were found promising under less favourable situations. PT 43 had almost unit responses to the changing environmental conditions and was a stable genotype; However, it was a low yielder.

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