Table 1 Joint Regression Analysis of a 7×6 Table of Data on the Compressibility of Natural Rubber

Row	Slope of regression on column mean		Sum of squares of deviations from regression	
	Observed	Predicted	Observed	Predicted
1	−0.06976	−0.06978	1.6555	1.6555
2	−0.02351	−0.02351	0.4934	0.4934
3	0.02505	0.02504	0.7303	0.7303
4	0.04518	0.04518	0.8872	0.8872
5	−0.07111	−0.07109	2.3716	2.3716
6	0.03761	0.03762	1.4658	1.4658
7	0.05653	0.05653	0.1905	0.1905

Comparison of the values previously determined by Mandel (Tables 3 and 4 of ref. 5) with those predicted by equations (2) and (3).

The predicted values were calculated by substituting the two coefficients of quadratic regression of specific volume on pressure into equations (2) and (3). The predicted deviations include the term $(e_{ij}-(B_i+1)e_{.j})$ for the observed deviations from the quadratic regression.

Table 2 Joint Regression Analysis of the Median Number of Days between Sowing and Emergence

	Slope of regression on treatment mean		Sum of squares of deviations from regression	
	Observed	Predicted	Observed	Predicted
French beans				
Glamis	0.283	0.283	4.714	4.540
Tendercrop	0.176	0.178	2.314	2.354
Bush Blue Lake	0.151	0.152	4.443	4.566
Prelude	0.150	0.152	6.812	6.837
Comtesse de Chambord	−0.024	−0.027	13.800	13.937
Runner beans				
Princeps	−0.226	−0.228	2.700	2.748
Hammonds Dwarf Scarlet	−0.254	−0.253	2.081	2.197
Streamline	−0.255	−0.256	1.763	1.785

Eight varieties of French and runner bean (*Phaseolus vulgaris* L. and *Phaseolus coccineus* L.) were sown on six occasions, from April to June 1969.

Cubic regressions were fitted between the median number of days from sowing to emergence, and the mean 0900 hours soil temperature at 10 cm depth for the 14 days following sowing. The predicted values were calculated from the coefficients of these regressions. The predicted deviations include the term $(e_{ij}-(B_i+1)e_{.j})$.

This work has various practical implications. The first, which applies particularly to genetic studies, is that the sum of squares for deviations from regression should be used as an additional index of stability only with caution. As the deviations sum of squares is not an additive combination of the underlying coefficients, non-additivity in the inheritance of this parameter does not necessarily imply that the gene effects are not additive. Also the two stability parameters cannot be independent and subject to the control of different gene systems[13,14], because they are not composed of different items.

Second, Eberhart and Russell[7] suggest that in the ideal variety the sum of squares for deviations from regression on the environmental effect will be zero. It follows from equation (3) that the conditions for this to obtain are that there should be no residuals about the underlying relationship, and that in this relationship there should be only one environmental variable ($p=1$). Alternatively, if there is more than one such variable then the deviations will vanish only if all the response coefficients of the variety equal the respective mean values ($a_i=a.$). In other words, if there is more than one operative environmental variable then the only ideal variety (on Eberhart and Russell's criterion) is the average variety.

Third, several authors[8,11,13,15,16] have reported cases in which varietal stability B_i was found to be correlated with the mean varietal performance $Y_{i.}$. Such correlations imply[5] that the regressions on the environmental mean were concurrent, that is, in certain environments the differences in performance between genotypes disappeared. Griffing and Langridge[17] have shown in *Arabidopsis* that genotypic differences tended to be smallest in the environments in which selection pressures had been strongest. This effect may be responsible for the reported correlations between stability and mean performance in genotypes of other species.

The full results of this work are to be published elsewhere. I thank J. T. Wood for the derivation of equation (3), and Drs Jean Perkins and J. Mandel for computer programs.

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Erratum

THE contents entry for the article by Greenblatt *et al.* which appeared in *Nature New Biology*, **236**, 25 (1972) should have read:

Carcinogens—*In vivo* conversion of phenmetrazine into its N-nitroso derivative—GREENBLATT, KOMMINENI, CONRAD, WALLCAVE and LIJINSKY (Nebraska)

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