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INTRODUCTION: The comprehension of the plant vegetative attributes in the yield is of a fundamental importance to the management, as well as to the genetic improvement. The main tool used in this study are the estimation of correlations, however, because they do not provide the relative importance of the direct and indirect influence of other characters in the yield, they do not determine the cause effect relation among them (Furtado et al., 2002).

The best comprehension of the evolved causes in this association can be obtained by the path analysis. On the other hand, multicolinearity conditions could produce inconsistent values or with any congruence with the biological phenomenon studied (Moreira et al., 2013). With the intention to study strategies to contour this effect it was aimed to evaluate different methods to sidetrack the multicolinearity, as well as study the simple correlation among the studied characters.

MATERIAL & METHODS: The experiment was conducted in the city of Londrina, Parana state, Brazil (23º19'41.00"S, 51º12'18.19"W and altitude 590m), in the period of March 18th until June 10th of 2016, in field conditions. Were evaluated three cultivars (Feltrin Vicenza Amarelo Baixo, UEL 1 e UEL 2) and seven accesses of snap beans from the germplasm bank of State University of Londrina (T1, T3, T13, T24, T25, T39 and T41). The evaluations were divided at the development stages R1 (plant´s height, total dry mass, foliar area, specific leaf area index and leaves dry mass) and R7 (plant´s height, total dry mass and yield of pods).

Were estimated the Pearson correlations and path analysis, in which the yield of pods was considered the basic variable and the other characters were considered the explicative variables. In conditions of high multicollinearity (Cruz; Carneiro, 2003) were proceeded the disposal of variables of high interrelation, as well as the crest path analysis.

RESULTS: Was observed in table 1 high interrelations among the vegetative characteristics of the snap bean plant, which had propitiate a multicolinearity considered severe (CN = 18526.29). To contour the adverse effects of multicolinearity, was applied at first, the exclusion of the leaf area and dry mass foliar variables in the development stage R1, which presented higher contribution to that fact, rendering the multicolinearity moderate (CN = 121.98). However, the effects of multicolinearity still yet observed (Table 2), as the presence of inconsistent values.

The second alternative to sidetrack this effect was the crest path analysis, with the value of k = 0.125 and with the utilization of all (Table 3). The coefficients of the path analysis obtained by this methodology show that the total dry mass of plants in the development stage R7 presented higher association with the yield of pods (0.74) with low participation of indirect effects.

Table 1. Pearson simple correlation values among the characteristics plant´s height (PH), total mass dry (TMD), foliar area (FA), index specific foliar area (ISFA), dry mass foliar (DMF) and yield of pods (YIELD) in snap beans.

	PH (R1[1])	TMD (R1)	FA (R1)	ISFA (R1)	DMF (R1)	PH (R7)	TMD (R7)	YIELD
PH (R1)	1	0.79**	0.80**	0.34	0.75*	0.64*	0.78**	0.27
TMD (R1)		1	0.95**	0.24	0.98**	0.55	0.47	-0.04
FA (R1)			1	0.42	0.93**	0.43	0.42	-0.09
ISFA (R1)				1	0.27	0.01	0.18	-0.27
DMF (R1)					1	0.58	0.46	-0.07
PH (R7)						1	0.83**	0.58
TMD (R7)							1	0.74*
YIELD								1

[1]At the development stages R1 and R7. **, * significant at 1% and 5%, by the t test, respectively.

Table 2. Estimative of the direct and indirect effects of the characteristics plant´s height (PH), total dry mass (TMD), index of specific foliar area (ISFA), under the yield of pods (YIELD) in snap bean.

Effect	PH (R1[1])	TMD (R1)	ISFA (R1)	PH(R7)	TMD (R7)
Direct on YIELD	-0.45	-0.15	-0.33	-0.18	1.37
Indirect via PH (R1)	-	-0.35	-0.15	-0.29	-0.35
Indirect via TMD (R1)	-0.12	-	-0.04	-0.08	-0.07
Indirect via ISFA (R1)	-0.11	-0.08	-	-0.01	-0.06
Indirect via PH (R7)	-0.12	-0.1	-0.01	-	-0.15
Indirect via TMD (R7)	1.06	0.64	0.25	1.13	-
Total (Pearson correlation)	0.27	-0.04	-0.27	0.58	0.74

[1]At the development stages R1 and R7.

Table 3. Crest path analysis with the estimative of the direct and indirect effects of the characteristics plant´s height (PH), total dry mass (TMD), index of specific foliar area (ISFA), dry mass foliar (DMF) under the yield of pods (YIELD) in snap bean.

Effect	PH (R1[1])	TMD (R1)	FA (R1)	ISFA (R1)	DMF (R1)	PH (R7)	TMD (R7)
Direct on YIELD	-0.08	-0.11	0.11	-0.27	-0.35	0.2	0.77
Indirect via PH (R1)	-	-0.07	-0.07	-0.03	-0.06	-0.05	-0.07
Indirect via TMD (R1)	-0.09	-	-0.11	-0.03	-0.11	-0.06	-0.05
Indirect via FA (R1)	0.08	0.1	-	0.04	0.1	0.05	0.04
Indirect via ISFA (R1)	-0.09	-0.07	-0.11	-	-0.07	-0.01	-0.05
Indirect via DMF (R1)	-0.26	-0.35	-0.33	-0.1	-	-0.21	-0.16
Indirect via PH (R7)	0.13	0.11	0.08	0.01	0.12	-	0.16
Indirect via TMD (R7)	0.59	-0.36	0.32	0.14	0.35	0.63	-
Total (Pearson correlation)	0.27	-0.04	-0.09	-0.27	-0.07	0.58	0.74

[1]At the development stages R1 and R7.

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