



Genetic improvement of plant architecture in the common bean

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ABSTRACT. Knowledge of genetic control of plant architecture in the common bean can help breeders define the most adequate breeding strategy to optimize gains. We examined genetic control of plant architecture in the common bean by means of partial diallel crosses. Fourteen bean lines were crossed under a partial diallel scheme, in which group 1 was composed of 8 erect plant lines and group 2 of 6 carioca-type grain lines. The F_1 plants from the crosses and the 14 parents were evaluated during spring (March sowing) for the characteristics plant architecture score, hypocotyl diameter, mean plant height, and grain yield. The additive effects were found to predominate in the genetic control of plant architecture score and hypocotyl diameter. Thus, selection of more erect plants can be done in early generations. Heritability estimate in a wide sense was greater for hypocotyl diameter (0.81) than for plant architecture score (0.60), showing that the latter is a more complex characteristic than the former. Hypocotyl diameter has

the potential to be used in the selection of more erect plants, either by considering selection between and within families, or by combined or phenotypic recurrent selection. The reason for this is that the diameter measurements are taken from individual plants inside the plots.

Key words: *Phaseolus vulgaris* L.; Genetic control; Plant architecture; Partial diallel; Quantitative genetics