
SCREENING OF BEANS TO DROUGHT RESISTANCE

Cleber Morais Guimarães, Marcelo Grandi Teixeira &
José Ruy Porto de Carvalho
National Research Center for Rice and Bean - CNPAF
Postbox 179 - 74000 Goiânia, Go - Brazil

The objective of this study was to identify promising lines for different soil moisture conditions. Two experiments were made using the same cultivars. The first one was planted in March in drought season and the second in July, 1980 in winter season with irrigation during the dry season. A total of 40 cultivars from the CNPAF/EMBRAPA active germoplasm bank were evaluated. The main plots were subdivided into three levels of soil moisture, being low (1), moderate (2), and high (3). The moisture gradient was established using the "line source sprinkler" method as described by Hanks et al. in 1976. Treatments were planted at right angles to the irrigation line in a randomized complete block design with 2 replications.

Linear regression analysis was conducted using yield against irrigation water for the three levels of moisture. The coefficients of regression and average yields for levels 1 and 2 from both experiments are presented in Figuras 1 and 2, respectively. In quadrant 3 were the cultivars which gave above average yields under drought conditions, but did not respond to irrigation. In quadrant 4 were the cultivars which gave high yields under water deficit conditions and which responded to irrigation.

From the 40 materials tested in the two seasons only the cultivar Bico de Ouro (1) gave consistent results in quadrant 4 (high yield under drought and irrigation conditions) while the cultivars: Jamapa (2), 8030-1-1 (3), Piratã (4), Sacaven 1334 (5) and Turrialba 2N (6) were only consistent under conditions of drought resistance in both experiments.

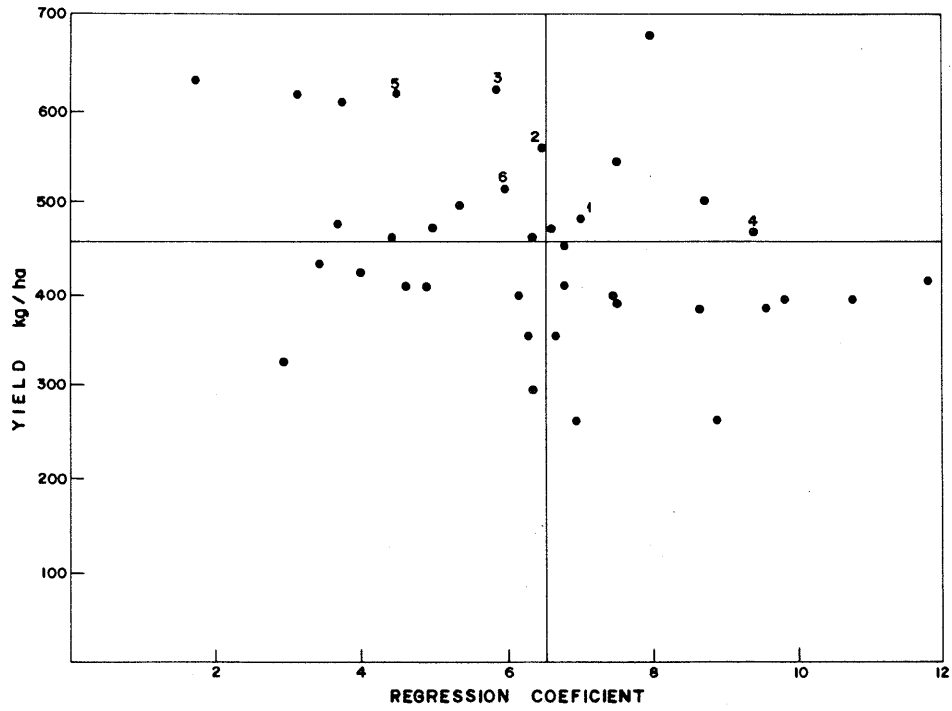


FIG. 1. Cultivar variability for drought resistance and irrigation response. The resistance was measured by the average yield of the low and moderate levels of irrigation, and the irrigation response by the coefficient of regression among yield of the treatment with low (1), moderate (2) and high (3) levels of irrigation and their respective total amounts of irrigation water of the experiments planted in March the "secas" drought season of 1980.

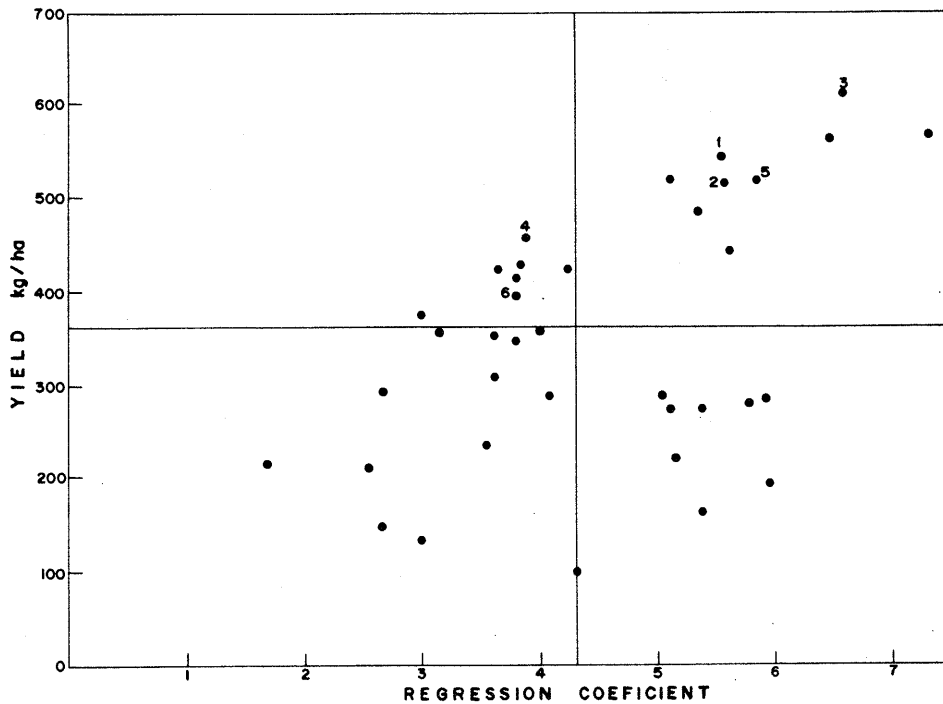


FIG. 2. Cultivar variability for drought resistance and irrigation response. The resistance was measured by the average yield of the low and moderate levels of irrigation, and the irrigation response by the coefficient of regression among yield of the treatment at low (1), moderate (2) and high (3) levels of irrigation and their respective total amounts of irrigation water of the experiments planted in July the "terceiro plantio" winter season of 1980.