

Differential root density and water extraction rate of bean (*Phaseolus vulgaris* L.) drought-sensitive and tolerant cultivars.

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The root density and water extraction rate of bean (*Phaseolus vulgaris* L.), cvs BAT 477 and Carioca, drought-tolerant, and RAB 96, drought-sensitive, were evaluated, at flowering, in 1987 and 1988, at the National Center of Research for Rice and Bean (EMBRAPA-CNPAF), Goiânia, GO, under severe, mild and without drought stress. The cultivars BAT 477 and Carioca had lower relative root density at the soil surface, and higher at deeper underground layers than RAB 96, when under drought stress. The cultivar RAB 96, under severe drought stress, had a water extraction rate of 0,76 mm³/cm/day in the 0- to 40-cm depth (Fig. 1), where was observed 79% of its root system. The cultivars BAT 477 and Carioca had an average water extraction rates of 3,32 and 3,06 mm³/cm/dia at the same depth, where was observed, respectively, 75 and 76% of their root systems. The drought-tolerant cultivars, under mild stress, had water extraction rates also higher. The cultivar BAT 477 had a water extraction rate of 409% higher than RAB 96, and 316% than Carioca into the 100- to 120- cm depth (Fig. 2)

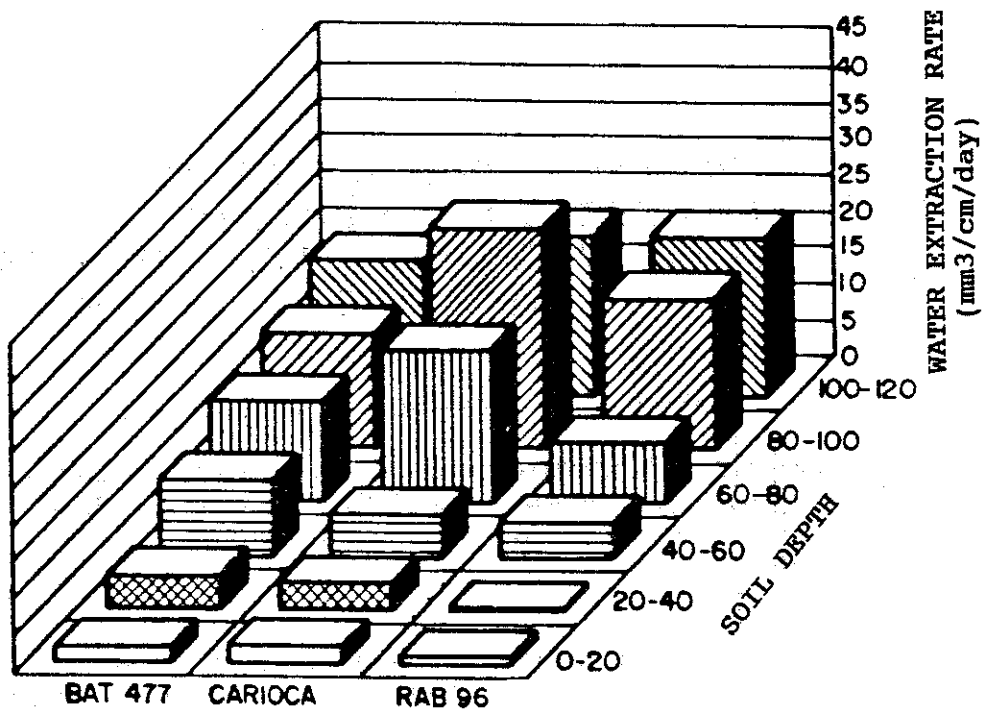


FIGURE 1. Root water extraction rate of bean cultivars BAT 477, Carioca and RAB 96 for a severe drought stress as a function of depth.

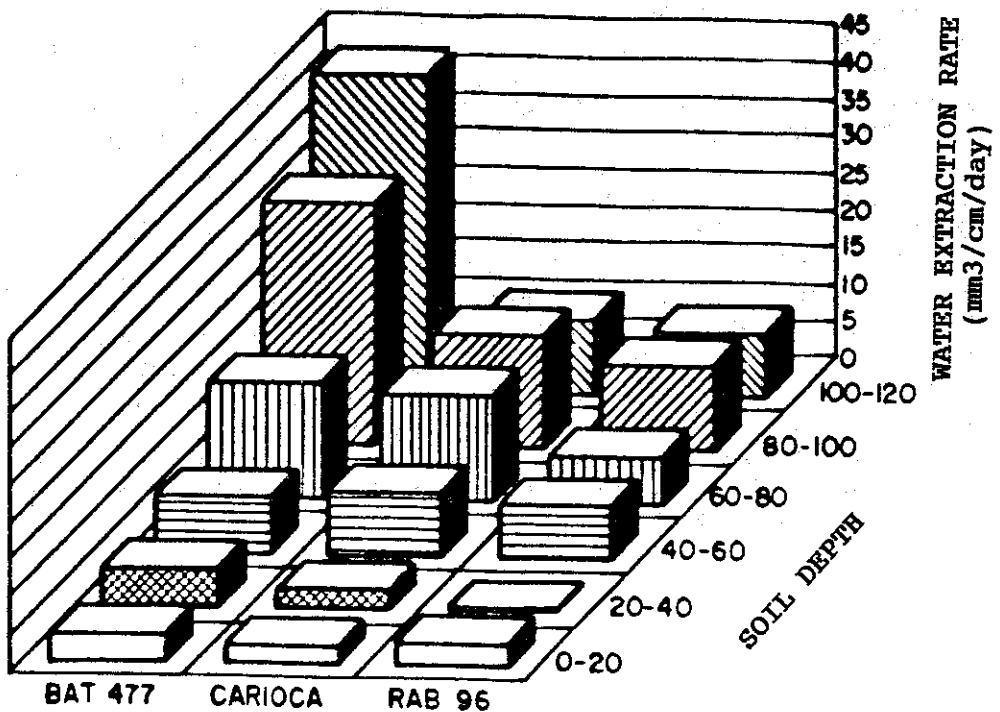


FIGURE 2. Root water extraction rate of bean cultivars BAT 477, Carioca and RAB 96 for a mild drought stress as a function of depth.