

# PERFORMANCES OF MUNGBEAN IN STIMULATED DROUGHT CONDITION

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Low moisture stress is the major bottleneck of achieving maximum potential yield from mungbean (*Vigna radiata*). This study was designed to assess and screen suitable mungbean genotypes for drought endurance using agro-morphological and physiological traits. Experiment was conducted at the Field Crops Research and Development Institute, Mahalluppallama during *Maha* season 2015/16. A two factor factorial experiment was laid out in a randomized complete block design with two replicates inside a movable rainout shelter and in the field. Two factors were mungbean genotypes and irrigation regimes. Thirty four mungbean genotypes were evaluated using three irrigation regimes namely; Rainfed condition, 16 and 24 days for simulating 70% and 80% allowable depletion levels respectively by exerting different degrees of low moisture stress. Crop was stress free for first two weeks after sowing and thereafter agro-morphological characters and yield were measured in critical crop growth stages according to irrigation regimes. Multiple analysis of variances and a principle component analysis were executed to screen elite mungbean genotypes. Rainfed mungbean showed far inferior growth ( $p < 0.05$ ) compared to two main irrigation regimes, due to alternative wet and dry conditions prevailed. Leaf temperature was highest in rainfed conditions during all stages of growth indicating continues stresses outside rainout shelter. Highest shoot length, pod dry weight, leaf dry weight, shoot dry weight and total shoot dry weight were recorded ( $p < 0.05$ ) in 24 day irrigation interval. On the contrary, canopy diameter, plant height, number of branches, leaf area, root length, root dry weight and seed yield were recorded quantitatively high in 16 day irrigation regime. Tolerance index of tested genotypes revealed 10 possible elite genotypes including MI5. Principle components were driven first by canopy diameter, leaf area and leaf dry weight, second by shoot and root length indicating possibilities of using such characters for screening. Bi-plots indicated different clustering in two irrigation regimes, however 09 well-performing mungbean genotypes were identified as possible candidates for drought endurance.

**Keywords:** Agro-morphological characters, Drought endurance, Irrigation regimes, Mungbean, Principle components