

C2091. SCREENING FOR DROUGHT RESISTANCE IN LARGE SEEDED COMMON BEAN IN KENYA

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Abstract

Common bean (*Phaseolus vulgaris* L.) is major grain legume important in human consumption. Andean bean genotypes are preferred for grain type and colour and constitute 60% of common bean production in eastern and central Africa. Drought causes loss of 395,000t annually in Africa. Genotypes resistant to drought do exist. The objective of this study was to select large seeded bean genotypes resistant to drought, carry out participatory variety selection and determine traits associated with drought resistance. Study materials of 175 genotypes of diverse characteristics from CIAT core collections, regional and national breeding programs, gene bank, and local released varieties were evaluated for five seasons in drought nursery at Kabete from 2008 to 2010 long rain season. They were evaluated in complete randomized block design under irrigated (IR) for non stress and non-irrigated (NIR) for drought stress treatments replicated three times. The whole trial was irrigated up to flowering stage to establish stand uniformity. NIR trial was later subjected to drought stress while IR trial received supplemental sprinkler irrigation as required. A combined analysis for water treatment and season effects were subjected to analysis of variance with 5% and 1% probability considered significant and highly significant respectively. Severe drought was experienced in short rain 2008 with drought Intensity Index (DII) 0.75. Seventeen genotypes were selected for higher grain yield from the three market classes including CIM-RM-02-01-07 and CIM-RM-02-04-03, ECAB 0031 and CIM-RK-03-03-14, NS 15457-3 and Sharp black. Drought severely reduced the grain yield by 22.3% in 2010 and 33% in 2009. Farmers selected 12 genotypes including NS 15454-28, MR14215-5-1P, CIM-RK-03-03-01, GCI-Cal 271-AR2, AFRI 708 and KAB 150. Days to flowering (DF), days to maturity (DM), 100 seed mass and pod harvest index (PHI) were positively correlated, but 100 seed mass and pod harvest index were highly correlated to non-irrigated grain yield. We recommend use of days to maturity, 100 seed mass and pod harvest index for selecting common bean genotypes under drought stress.

Key words: Sugars, Red kidneys, Red mottled. Participatory, Andean