Abstract

Food security has, tremendously, been imperiled globally by climate change and variability. Sundry efforts put by different organizations to address food insecurity has not, sufficiently, attenuated the problem. This is exacerbated by the rapidly growing population against the dwindling production resources. The problem is even worse in Arid and Semi-Arid Lands (ASALs) whose environmental conditions, for crop growth, are quite fragile. Dry beans (Phaseolus vulgaris L.) are a crucial food crop, commonly grown in these areas since they provide cheap source of proteins for poor households. However, beans production, in these fragile agro-ecologies, is impeded by sporadic rainfall, erratic rainfall, meagre soil nutrients, low moisture levels, nutrients fixation among other factors. A field-based study was undertaken at South Eastern Kenya University (SEKU), Kenya, and Kenya Agricultural and Livestock Research Organization (KALRO), Kenya, to determine the efficacy of foliar fertilizer nutrition on commonly grown bean varieties in semi-arid area of South Eastern Kenya. In the first season, the study was undertaken in Teaching and Research Farm of SEKU, while the second season was done in KALRO substation at Ithookwe. In both seasons, treatments were arranged in a Randomized Complete Block Design (CRBD) and were replicated three times. The efficacy of three concentrations of foliar nutrients, (0/L or control), (2.5mls/L) and (5mls/L), on grain yield of three bean varieties was evaluated. Data was collected on Leaf Area Index (LAI), number of pods, and grain yield. The results in both seasons exhibited that, Wairimu and Wairimu dwarf had the highest LAI of 0.08 and 0.09 respectively and were not significantly different from each other in both seasons; it was followed by Piriton (0.06) and KAT B9 (0.05) but were, also, not statistically different from each other. In terms of number of pods per plant, in season 1 and 2 respectively, Wairimu had the highest number (21.77, 26.83) followed by Wairimu dwarf (19.44, 27.66), Piriton 25.33) and KAT B9 13.32, 16.00) in that order. The grain yield, in both seasons (kg/ha), showed that Wairimu had the highest yield of (440.08, 439.60), followed by Wairimu dwarf (385.69, 388.71), Piriton (386.09, 382.13), and KAT B9 (381.45, 379.58) in that order. In view of the above findings, the study recommends use of foliar nutrients/ fertilizers at the rate of 5.0 mls/L, as oppose to the conventional use of 2.5mls/L, in increasing the yields of the four aforementioned varieties, commonly grown in ASALs.