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Integrated use of Fertilizers and Bio-Stimulant affect the Growth and Seedling Development of ChiliMaria

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Abstract

Common beans, being a nutritionally rich and widely consumed legume, require the evaluation of diverse genotypes to identify those with superior agronomic traits. This study aimed to evaluate the morphological variation among 16 common bean (*Phaseolus vulgaris* L.) genotypes collected from diverse regions of Azad Jammu and Kashmir and NARC Islamabad, Pakistan. The experiment was conducted on August 15, 2023, at the Vegetable Crop Research Program field in Islamabad. The 16 genotypes were replicated three times, resulting in a total of 48 plants, and arranged in a Randomized Complete Block Design (RCBD) to ensure uniformity and precision. Genotypes were assessed based on growth habit, leaf area, leaf shape, number of nodes, stem and flower color, number of flowers, days to flowering, days to fruit setting, and chlorophyll content. Analysis of variance (ANOVA) revealed significant differences among genotypes for most traits. Genotype AJKS8 (15) exhibited superior performance with the greatest plant height, highest number of nodes, and maximum flower production. In contrast, genotype 37753 (1) recorded the shortest height and smallest leaf area. All genotypes displayed ovate leaf shapes, with variation in stem and flower color, ranging from light green to dark stems and white to purple flowers. Genotype 37886 (10) flowered earliest, while genotype 37789 (11) showed the longest flowering duration. Least Significant Difference (LSD) analysis categorized genotypes into distinct groups, confirming considerable genetic diversity. These findings provide valuable insights for selecting high-performing landraces and contribute to future common bean breeding and improvement programs.

Key words: *Common Beans genotypes, Morphological characteristics, Genetic diversity*