IDENTIFICATION OF DROUGHT RESISTANCE IN LARGE SEEDED COMMON BEAN GENOTYPES

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ABSTRACT

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The bean production areas in Ecuador are subject to intermittent drought and the available irrigation systems do not always provide the minimum water requirements of the bean crop resulting in yield and economic losses. Selection for drought tolerance in common bean (*Phaseolus vulgaris* L.) should be considered as the most practical strategy to help stabilize bean production. The objectives of this study were to: i) evaluate 16 bean genotypes and an inbred backcross line (IBL) population for drought resistance under field conditions in Michigan and Ecuador, ii) compare bean root systems in the greenhouse to identify root traits associated with superior performance under drought stress in the field.

Five genotypes in the IBL population were selected based on high geometric mean (GM) yield in the field, yield under stress, seed weight, and seed quality. The selected genotypes will be further evaluated in Ecuador. Genotypes showing drought resistance and commercial traits were also selected as parents to develop new IBL populations to evaluate under Ecuadorian conditions.

Low correlations were observed between GM yield and root traits measured in 1m-long PVC tubes in the greenhouse. The tube methodology did permit the identification of genetic differences in root traits among genotypes grown under stress conditions.