



Research paper

## The Performance of Nine Common Bean (*Phaseolus vulgaris* L.) Genotypes under Three Sowing Dates, in River Nile State

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### ABSTRACT

The performance of nine common bean genotypes (*Phaseolus vulgaris* L.) was investigated under sowing dates. The field experiments were conducted during winter season of 2003/04 and 2005/06 in Hudeiba Research Station Experimental Farm, Eddamer, River Nile State. The objective of the study is to identify the most tolerant genotypes to heat stress. Nine genotypes of different seed sizes; small seeded (Basabeer, DB 190-74-1 and UBR(92)25-2), medium seeded (Giza-3, Bellenber-1 and COWU-3-94-9) and large seeded (Ibarya, Turki-2 and S/Hashim/98), were tested at three sowing dates; early (SD1, 1<sup>st</sup> Oct.), optimum (SD2, 30 Oct.) and late (SD3, 30 Nov.). A split-plot design with three replications was used to execute the experiments; sowing dates were assigned to the main plots and genotypes to the subplots. Results showed that sowing date treatments significantly affected the reproductive traits of common bean genotypes. The highest values of yield under stress (early planting to yield under non-stress (YSD1/YSD2) conditions were obtained with the small (59 %) and medium (82 %) seeded genotypes. However, the highest values of yield under stress (late planting) to yield under non-stress (YSD3/YSD2) were obtained with the large (53 %) and the medium (56 %) seeded genotypes. The highest value of geometric mean productivity (1591 kg) was obtained with the genotype Giza 3. The highest values of geometric mean productivity at SD1 (1842 kg and 1734 kg) and SD3 (1338 kg and 1530 kg) were obtained by Basabeer and Giza3 genotypes, respectively. The genotypes Basabeer and Giza3 are adapted to favorable conditions. Bellenber-1 is the most tolerant under heat stress conditions at both early and terminal heat stress and can be used in breeding program.

**Keywords:** Common bean, genotypes, heat stress, sowing dates, Sudan.