Effects of Rising Temperature on Mungbean [*Vigna radiata* (L.) Wilczek] Genotypes

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Abstract—*Continuously rising temperature as result of climate change will have adverse impacts on various agricultural crops. Mungbean is a major summer season short duration food legume and consumed world widely for its higher nutritional values. The optimum temperature for growth and development of mungbean is 28-30°C; increase in temperature beyond this range especially during reproductive phase, are reported to significantly reduce its yield performance. Therefore, a study was conducted to access the impacts and responses of heat stress (>40/28°C) during reproductive growth on mungbean genotypes and to investigate mechanisms and traits related with thermo tolerance. For this purpose, forty one mungbean lines were screened by growing them under outdoor conditions at two sowing dates (1) in march, the normal sowing time (temperature during reproductive stages <40/28°C) (2) in April, the late sowing time (heat stress ;temperature during reproductive stage >40/28°C. Under late sown conditions, plants showed various symptoms of leaf rolling, scorching, reduced leaf area chlorosis and necrosis compared to normal sown plants. Also, accelerated phenology and significant reduction in biomass, number of flowers, pods and seed yield were recorded in late sown plants. Therefore, heat stress during reproductive stage of late sown plants of mungbean was found to be detrimental for the growth as well as yield. In our study, few heat tolerant genotypes were identified (EC693357, EC693358, EC693369, Harsha and ML1299) that would not only serve as effective donor for breeding programs but also provide insight in to heat stress induced effects on cellular metabolism.*

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