

## **Growth and Yield Performance of Selected Sesame Varieties and Breeding Lines under Drought Stress**

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Drought has been a significant challenge to crop production worldwide, affecting a wide range of crops via yield losses and crop failures. The aim of the present study was to investigate the growth and yield performance of selected sesame varieties and breeding lines cultivated under moisture-stress conditions. A pot experiment was conducted as a Completely Randomized Design (CRD) in a rain shelter. Two commonly grown sesame varieties (Uma and Malee) and two promising breeding lines (Ye An and Yupung) were grown under well-watered and moisture-stressed conditions. All pots were maintained at 80% field capacity until the drought treatment was imposed. The moisture stress was imposed by drying out the soil without irrigation for several days until leaf wilting symptoms appeared and then re-watered with half the amount of water to that of 80% field capacity. Plant growth, uptake of nitrogen (N), phosphorus (P) and potassium (K) and their use efficiency were measured. Drought had a significant impact on accumulation of biomass of Malee and Yupung varieties. N uptake of Malee was greatly reduced under drought and was unable to increase the use efficiency of acquired N under drought. Although P uptake of Uma was reduced under drought, the use efficiency of acquired P was greatly enhanced. K uptake of Malee and Yupung was significantly reduced ( $P < 0.05$ ) under moisture stress, and those cultivars were unable to utilize the acquired K more efficiently in biomass formation under drought stress. There was a greater tendency to reduce the pod number of Uma and Malee grown under drought stress compared to well-watered condition. Drought, on the other hand, had no effect on the pod length and width of the tested varieties and breeding lines. Uma and Ye An seem to be more drought tolerant in biomass formation compared to Malee and Yupung.

**Keywords:** Biomass accumulation, Drought tolerance, Moisture stress, Sesame

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