

## SELECTION OF TOLERANT GENOTYPES OF SAFFLOWER BASED ON PHYSIOLOGICAL TRAITS

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### Abstract:

Drought is one of the most important limitations affecting crop production all around the world. Identifying appropriate selection tools can facilitate the breeding of plants for drought tolerance. Safflower (*Carthamus tinctorius* L.) is an oilseed crop adapted to drought prone arid and semi-arid environments. In the present study, relative water content (RWC), excised leaf water retention (ELWR), leaf water content (LWC), relative water lose (RWL), moisture retention capacity (MRC), leaf chlorophyll content and leaf prolin content were used as physiological parameters for the study of 20 spring safflower genotypes under drought-stressed and normal conditions in the research field of Islamic azad university, Khorasgan Branch in 2012. The experiment was a split-plot on the basis of a Randomized Complete Block Design with three replications. It was found that drought stress significantly decreased relative water content and leaf water content. These traits were accompanied with a great loss of yield in sensitive genotypes. It seems that Afghanistan genotype was more capable of being cultivated in regions experiencing water deficiency. Overall Proline accumulation (along with the accumulation of glucose and potassium), higher chlorophyll content and relative water content can be used as selection criteria in drought stress conditions.

**Keywords:** Drought, selection, safflower, physiological traits, water deficit.



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