



**University of Zabol**

University Pardis  
Faculty of Agriculture  
Department of Agronomy

Thesis Submitted in Partial Fulfillment of the Requirement for the degree of Master of  
Science Ph.D in Agronomy

**Title**

**The effect of different irrigation regimes on some  
morphophysiological traits of promising sunflower  
cultivars**

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## **Abstract**

One of the most important factors in farm management to achieve optimal conditions for plant community growth and proper yield is to provide sufficient water so that the plant does not suffer from moisture stress in critical stages. This study was conducted as split plots in a randomized complete block design with four replications in Ahvaz Agricultural Research Center during 2016 and 2017. Irrigation regimes after evaporation of 50, 70 and 90 mm from Class A evaporation pan were placed in the main plots and six cultivars of Progress, Farrokh, Barzegar, Record, Azargol and Lakomka were placed in the sub-plots. The results showed plant height, head diameter, stem diameter, number of seeds per head, seed and kernel dimensions (length, width and thickness), 1000-seed weight, grain yield, stem dry weight, biological yield, photosynthetic pigments with increasing irrigation regime Evaporation from 50 to 90 mm from Class A evaporation pan was significantly reduced and proline, grain protein, antioxidant enzymes and malondialdehyde were increased. Also, the interaction effects of year, irrigation regime and cultivar for stem diameter, number of seeds per head, kernel length, stem dry weight, 1000-seed weight, grain yield, proline, grain protein, ascorbate peroxidase, superoxide dismutase were significant. The maximum 1000-seed weight (80.3 g), number of grains per head (45.38) and grain yield (2529 kg/ha) from the combination of 50 mm evaporation from the evaporation pan and the record cultivar during two years of testing and more The highest concentrations of proline (20.8 mg/g fresh leaf weight), ascorbate peroxidase (20.8 units/mg protein) and superoxide dismutase (2.1 units / mg protein) evaporated from the treatment composition of 90 mm Evaporation from the pan and the record figure was obtained in two years. Therefore, according to the results, for the Ahvaz region, a record figure and irrigation of 50 mm from the evaporation pan is suitable.

**Keywords:** Proline, Oil percentage, Record cultivar, MDA.