

# Designing & Establishing of Prediction Modeling for Probability of Heat Causing Damages in Olive Orchard

## Case Study: Tarom Olya Region

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### Abstract

Heat damage in olive orchard causes yield loss and prediction occurrence time of heat damage phenomenon, knowing of regions & suitable varieties and ultimately assurance of production will be achieved. In this regard, by using meteorological data and determination of first Julian (Julius) day of damage causing temperatures at flowering stage, damage occurring probability could be calculated. In order to predict heat damage occurring probability, four main Olive variety including Zard, Roghani, Arbkin and Kronaiki were selected and evaluated over 19 temperature statistic years in Tarom Olya Region of Zanjan province (the main area of olive cultivation). Results showed that flowering date of all Olive varieties set to Julian dates of 133, 134, 135 and 136, respectively. By using Easy Fit and Minitab soft wares the most damage occurring probability was related to Zard variety with weak intensity and annual return period of 95.3% and lowest heat causing occurring probability was related to Kronaiki with great intensity and 3.8 years return period of 26.2%. It could be stated that one day difference at full flowering stage change the one percent of damage occurring probability. Results also showed that as Julian days increased, in the other word we went on warm days, and damage causing probability (according by full flowering days) would be increased at all three levels, more intensive damage causing probability would be lower. Thus, with regard to properties of each variety, especially full flowering dates, in addition to study of this species, region climatic characteristics and return period of risk factors in insurance must be calculated and then possibility of expansion of Olive trees is recommended.

### Keywords:

Olive, Full Flowering, Heat Damage, Prediction, Modeling, Insurance.

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