

**O-16 (71)****ORCHARDS MANAGEMENT FOR REDUCING OF THE POMEGRANATE ARIL BROWNING DISORDER**

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Aril browning (AB) or aril paleness disorder in pomegranate fruit is a kind of physiological injury that critically decreased fruit quality as well as marketing demand during last recent years. The main effects of the AB disorder are destruction in aril texture, oxidation of polyphenol substances, discoloration in aril and unpleasant taste of the fruit. In this study, the effects of the overhead Sun Screen, Kaolin spray, fruit thinning, supplementary irrigation and fertilizer application on decreasing of the AB disorder through the affected pomegranate (*P. granatum* cv. 'Malase Torshe Saveh') orchard was investigated. An experiment was carried out as a complete randomized block design with eight treatments and three replication on a commercial pomegranate orchard, Saveh, Iran. A total of eight treatments, including 1) (3%) Kaolin spray at 40 days after full bloom (DAFB), 2) fruit thinning at 40 (DAFB), 3) supplement irrigation at 80 (DAFB), 4) combination of fruit thinning and kaolin spray, 5) supplementary irrigation combination with fruit thinning and kaolin spray, 6) control with conventional management, 7) Animal manure application combination with foliar spray of the Potassium sulfate and Nitrate calcium, 8) overhead sunscreen combination with kaolin spray and supplementary irrigation have been done, during two seasons at 2014 and 2015. The physicochemical properties including fruit weight, dimension and volume, aril browning index, the frequency of the affected and non-affected fruits, juice (%), (PH), electrical conductivity (Ec), total soluble solid (TSS), titratable acidity (TA), juice color absorbance value, and total anthocyanin of the fruit juice were measured. The results showed that the Kaolin spray didn't have the significant effects of the AB disorder, but the overhead sunscreen treatment combined with the supplementary irrigation and kaolin spray effectively reduced the AB index (in 24%) and increased the abundance of non-affected fruit (in %96). In the fruit thinning, the AB index (in 69%) and frequency of the affected fruit increased significantly compared to the control treatment. Although the supplementary irrigation positively ameliorates the AB disorder symptoms, but its difference was not considerable. It seems that the AB disorder is results of the interaction effects of the high air temperature, low relative air humidity, and low water quality. Therefore, in the affected pomegranate orchard the overhead sunscreen, increasing soil organic matter, irrigation with fewer intervals, and foliar spray of potassium and calcium during the growing season can improve the pomegranate fruit quality.

**Keywords:** Pomegranate (*Punica granatum* L.), 'Malase Torshe Saveh', Aril Browning, Physiological Disorder, Anthocyanin, Kaolin Spray, Supplementary Irrigation, Fruit Thinning, Overhead Sunscreen