**The Influence of Deficit Irrigation Treatments on Flowering Physiology of Gladiolus**

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**Abstract**

In recent years, the effects of climate change have been also seen in the ornamental plants sector. This situation affects the cut flower, especially gladiolus production in open fields during the semi-arid summer period. Optimizing the flowering time and increasing the flower yield in gladiolus cultivation can be achieved by ensuring the irrigation schedule. For this reason, climatic data should be determined at the right time and plant water consumption values ​​should be known in advance. This study assessed the effectcs of diffrent irrigation levels on flower quality, yield and some vegetative growth parameters in *Gladiolus grandiflorus* cv.’White prosperity, Peter pears, Red Balance, Priscilla’. In the experiment, irrigation treatments were started by the emergence of plants. Both cultivars irrigated according to the drip irrigation method by using moisture sensors in the root zone under the soil. In the full irrigation (I100), according to reduced in moisture level, irrigation started to refill the root zone up to field capacity. In the deficit treatments, water was applied in the range of 75%(I75), 50%(I50) and 25%(I25) of the full irrigation. Collected data showed that, deficit irrigation practices had significant effects on flowering and growth characteristics of the Gladiolus cultivars. In terms of the agronomic and physiological characteristics examined on the plants, the effects of I100 and I75 irrigation applications were similar, whereas water stress had strong effects on I50 and I25 irrigation subjects. Flowering periods were shortened by the I50 and I25 treatments. Spike length, number of florets per spike, flower stem diameter, stem length, leaf chlorophyll index and stomatal resistance were also reduced by deficit irrigation treatments. While the ‘Peter pears’ showed a certain tolerance to minimal levels of irrigation, ‘White prosperity’ was more exposed to drought stress. There were positive and statistically significant correlations between all measured characteristics except for petal color. Petal color was found to be negatively correlated with other measured characteristics.

**Keywords:** *Gladiolus grandiflorus*, cut flower, water deficit, flowering physiology

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