Response of some strawberry (*Fragaria ananssa* Duch.) cultivars to deficit irrigation regarding leaf area and some quantitative and qualitative characteristics of fruit

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(Received: 10 June 2016 ; Accepted : 24 April 2017)

Abstract

In order to identify drought tolerant strawberry (*Fragaria ananassa* Duch.) cultivars and investigate some of their morphological, quantitative and qualitative characteristics, a research was conducted as split plots based on randomized complete blocks design with three replications under greenhouse conditions. Deficit irrigation stress was considered as the main plot factor at 4 levels (control (0), 20, 40 and 60 percent) and subplot factor was cultivar at 6 levels (Kurdistan, Camarosa, Merak, Paros, Queen Eliza and Selva). Leaf area showed a 41.42% reduction, and number of flowers and fruits showed 90% reduction in 60% stress treatment in comparison to the control. Total soluble solids (TSS) showed an increasing trend up to 40% stress severity. As stress increased, titrable acidity (TA) showed a decreasing trend. A high heritability was observed for number of flowers and fruits, fruit weight and TSS. Considering the three-dimensional plot of STI, $\overline{Y}_S$ and $\overline{Y}_P$, the Kurdistan and Camarosa cultivars were identified as the most suitable cultivars in both deficit irrigation stress and non-stress conditions. So, these cultivars could be used in breeding programs in order to increase drought tolerance. According to the responses of cultivars to deficit-water stress, more leaf area, number of flowers, number of fruits number, fruit weight, and TSS, and lower TA are introduced as the selection criteria for drought tolerant strawberry cultivars.

Keywords: Drought, Soluble sugar, Stress tolerance index, Juice pH.

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