Abstract

Purple passion fruit ***(Passiflora edulis*** f***. edulis*** Sims.) is an important fruit in the tropics, but its growth can be adversely affected by drought stress. This study evaluated effects of irrigation rate and mulch type on drought stress amelioration in purple passion fruits. The experiment was set up in a rain shelter in a randomized complete block design, replicated four times and repeated once. The irrigation rates were: 2.5, 5, 10 and 20 L/plant, while mulch types were: black plastic film, wheat straw and mulch-free control. Each treatment had 12 plants in 45 cmx45 cm planting holes spaced at 1.5 mx1.5 m and trellised onto posts and wires. The plants were subjected to different treatments from the fifth week after planting. Data were recorded bi-weekly and subjected to analysis of variance using the SAS software. The 16.8 laterals, leaf area of 122 cm^2/leaf, and leaf biomass of 2.4 g/leaf for 20 L were significantly greater than the 11.3 laterals, leaf area of 106.5 cm^2/leaf, and leaf biomass of 2.0 g/leaf for 2.5 L at $P<0.05$. Black plastic and wheat straw mulches significantly increased leaf biomass to 2.3 g/leaf. The 20 L significantly increased combined florals to 332 and dropped flowers to 241, compared to 250 and 171, respectively, for the 2.5 L. Black plastic mulch significantly increased combined florals to 326, dropped flowers to 235 and immature fruits to 76, compared to 263, 188, and 59, respectively, for 2.5 L. The 10 L and 20 L, as well as the black plastic and wheat straw effects were correspondingly not significantly different. When irrigating with at least 5 L, no additional benefit of mulching was observed, but mulch ameliorated drought stress when deficit 2.5 L was applied. The 10 L and the biodegradable wheat straw mulch are recommended for maximizing growth and flowering of purple passion fruits.