

Abstract

Drought stress is one of the most important factors that reduced productivity of agricultural production around the world and also, in Iran. Increase the stress tolerance of crops to these stress is important in areas that have dry season. In order to evaluate effect of potassium fertilizer and ascorbic acid on quantitative and qualitative yield of sesame under different levels of drought stress, an experiment was conducted in the field of agricultural research institute of zabol university (chahnimeh). main factor was drought stress at three levels, mild stress, medium stress and high stress and sub factor was, control (without use of potassium and ascorbic acid), application potassium sulfate fertilizer on 2 levels (100 and 200 kg/ha) and spraying ascorbic acid on 2 levels (1 and 2 mM). The characteristics that was examined in this study include: height, yield, yield components (number of pods per 1 square meter, number of seeds inside pod, and 1000 seed weight), proline, amount of carbohydrates, protein and oil percent. In this experiment, drought stress treatment have a significant impact on the quantity and quality traits that measured. So that effect of drought stress had significant decrease in height, number of pod per square meter, yield, biological yield and harvest index. Seed yield were decreased 35.5 percent under drought stress. protein, carbohydrates and proline, had a significant difference, under drought stress. maximum amount of protein was 21.36 percent, in the treatment of high stress, so that amount of increased 5.39 % compared to control. Proline was affected by drought stress. between Osmoregulators, spraying 1 mM ascorbic acid makes a significant difference in the number of seed in pod, number of pod per 1 square meter, yield and biological yield. yield is influenced by application of ascorbic acid and increased 27.30% to compared to control, that showed positive effect of ascorbic acid on the yield of sesame. Of course between quality traits, only protein was significantly affected by the spraying of 1 mM, that showed 33.3% increase to compared to control. potassium sulfate not caused significant difference between the quantity characteristics, of course increase amount of carbohydrates. interaction effect caused meaningful. The treatments such as: height, yield and harvest index. The highest yield (500 kg) obtained from effect of interaction mild stress and application 200 kg of potassium sulfate. According to the obtained results in this experiment was showed, drought stress and spraying 1 mM ascorbic acid, greatest impact on their quantitative and qualitative characteristics. It was also, ascorbic acid spraying could remove harmful effects of drought stress, and positive effect on quantitative and qualitative yield of sesame. Although potassium sulfate could not have a significant effect on drought stress, but in many cases reduce the harmful effects of stress.

Key words: Sesame, Drought stress, Potassium sulphate, Ascorbic acid, Yield



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**Effects of potassium fertilizer and ascorbic acid on quantitative and qualitative
yield of sesame under different levels of drought stress**

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