**Effect of Mycorrhizal and Fertilizer Phosphate Barvar 2 on quantity and quality yield of Safflower (*Carthamus tinctorius* L.) under Drought Stress**

Abstract:

In order to investigate the effect of bio fertilizers of Mycorrhiza and phosphate Barvar2 on quantity and quality yield of safflower under drought stress conditions, this experiment was conducted in Marvdasht area of Shiraz Province in 2016, as split plot in a randomized complete block design with three replications. Main factor including water stress in three levels (full irrigation, stress at flowering and pollination stage, and stress at seed filling stage) and bio fertilizers as sub factor were including (control or no application Bio fertilizer), Phosphate Barvar 2, Arbuscular mycorrhiza, and Arbuscular mycorrhiza + Phosphate Barvar 2). Application of bio fertilizers increased the grain yield components including number of fertilizer per head, number of seeds per head and 1000-grain weight. The highest grain yield (3413 kg ha-1) was obtained in conventional irrigation treatments and the combined application of biofertilizers, arbuscular myrrhiza and phosphate Barvar2, and the lowest grain yield (1451 kg ha-1) in stress treatment at flowering stage and in the absence of bio fertilizer application. Stress at flowering and pollination stage reduced the grain yield. The highest percentage of seed oil was obtained in conventional irrigation treatments and integrated application of bio fertilizers, and the lowest percentage of seed oil was due to grain filling stage stress and non-application of bio fertilizers. Drought stress on reproductive stages and grain filling, significantly reduced seed, oil yield and percentage of seed protein and using bio fertilizers in drought stress conditions increased the mentioned traits. Biological fertilizers can Mejorar the negative effects of drought stress or lack of root access due to increasing the efficiency of absorption and transport of nutrients and Mycorrhizal coexistence by providing the necessary conditions for the absorption of nutrients and water.

**Keywords:** Bio fertilizers, Sustainable agriculture, Oil yield, Seed yield, Safflower