



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Effects of Different Soil Salinity Levels on Germination and Seedling Growth of Safflower (*Carthamus tinctorius* L.)

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Abstract: Safflower (*Carthamus tinctorius* L.) is rated as moderately salt tolerant and it can produce profitable crops on saline soils. It is slightly more tolerant of salinity than barley but is more tolerant than wheat. Because salinity reduces germination and delays emergence, safflower stands tend to be irregular and crop yield is depressed. However, some varieties are less affected by salinity than others. In this study, we aimed to determine the effects of soil salinity levels (0.8, 2.5, 5.1, 8.7, 13.0, 15.2 and 23.0 dS m⁻¹) on germination and seedling growth of three safflower varieties, one of which is spiny (5-154 cv.) and two of which are spineless (Yenice 5-38 and Dinçer 5-118 cv.). Emergence rate, root and shoot length, root and shoot dry weight, root/shoot dry weight ratio, root and shoot dry weight salt stress index were investigated. The results showed that the highest values for the investigated traits were obtained from variety 5-154 (spiny), while they diminished with increasing soil salinity in all cultivars. Among the varieties, the highest emergence rate, root length, shoot length, root dry weight, shoot dry weight and root/shoot dry weight ratio at 23.0 dS m⁻¹ were determined from 5-154 cv. with 23.35%, 3.54 cm, 4.97 cm, 7.23 mg, 26.73 mg and 20.77%, respectively. Moreover, 5-154 cv. gave the higher root and shoot dry weight salt stress index, especially at high salinity levels. The seedling growth of varieties was inhibited by 5.1 dS m⁻¹ although they showed varying responses. At the first development stage, the root growth of safflower was more adversely affected compared to shoot growth by soil salinity. If the cultivation of safflower on saline soils is required, spiny varieties should be preferred.

Key Words: Safflower (*Carthamus tinctorius* L), germination, salinity, seedling growth

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