A study of drought resistance of stinkwort (Dittrichia graveolens)

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ABSTRACT

Stinkwort (Dittrichia graveolens) is a Mediterranean annual composit that flowers in the fall in California at the very end of the dry season after most other annuals have completed flowering and seed set. It is observed growing in areas with and in disturbed habitats in hard, compacted soil that appears to be dry. This note indicates that the plant possesses a high degree of drought resistance.

This study evaluates two attributes of the plant that might aid in drought resistance: plant water use efficiency (WUE) and plant root/shoot ratio. WUE is defined as the ratio of shoot dry weight to weight of water transpired. Root/shoot dry weight is a measure of a plant's ability to maximize use of available soil moisture by developing an extensive root system.

Water use efficiency was determined by growing stinkwort plants in containers, obtaining dry weight measurements and measuring weight loss over time. Corn plants were also grown in the study as a reference species because the WUE of corn has been well-characterized in previous research. It was found that stinkwort plants grown under well-watered conditions did exhibit high relative water use efficiency. They were found to have a relative WUE value of 0.347 percent per gram of dry weight. To measure root/shoot ratio, stinkwort plants were collected in the field, and root and shoot dry weights were measured. A relatively low root/shoot ratio of 0.14±0.03 was obtained.

The results of this study did not indicate that stinkwort has the ability to avoid drought stress by means of high water use efficiency or through investment in an extensive root system. Further research is needed to determine whether it employs either and/or both methods to achieve this level of resistance.

REFERENCES


