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### *Full Length Research Paper*

## Relationship between seed size and NaCl on germination, seed vigor and early seedling growth of sunflower (*Helianthus annuus* L.)

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### Abstract

In recent years, the use of sunflower seeds sorted by seed size has been extensively increased in Turkey but little is known about the effects of seed size on germination, emergence, seedling growth and seed vigor in arid and semiarid region suffering from salinity problem. Two seed sizes of cv. Muson and Sirena of sunflower classified as small (6 - 15 mm for Muson and 7 - 16 mm for Sirena) and large (>15 mm for cv. Muson and >16 mm for cv. Sirena) were exposed to 0, 10 and 20 dS m<sup>-1</sup> of NaCl. Germination percentage (%), mean germination time (day), root and shoot length (cm) and dry matter (%) were investigated. Seed vigor was tested by accelerated ageing (AA) test performed at 45°C and 100% relative humidity for 3 days. Results showed that higher water uptake and hull rate was obtained from large seeds. Small seeds germinated and grew more rapidly compared to large seeds of the same cultivars under NaCl stress. NaCl caused lower root and shoot length but higher mean germination time and dry matter. Therefore, viability after accelerated ageing was lower in small seeds than large seeds. Emergence percentage did not change by seed size, but cotyledon length was shorter in small seeds. It was concluded that although large seeds produced vigorous germination and seedling growth yet small seeds could also be used for

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successful sunflower production in salt affected areas.

**Key words:** Germination, *Helianthus annuus*, seed size, NaCl, seed vigor.

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