



## A REVIEW

# Effect of saline water on growth, yield, quality and soil properties in barley (*Hordeum vulgare* L.)

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**Abstract :** The opportunities for salinity research are enormous due to size and diversity of the country, where all kind of soils and waters of varying quality are encountered and require solutions. Salt accumulation leads to two major stresses for the plants: osmotic stress and ionic stress. The osmotic stress firstly comes in plants when salt concentrations increase outside the roots, which leads to reduction in water uptake and subsequently plant development. The ionic stress develops when Na<sup>+</sup> accumulation increases in plants particularly in leaves over threshold level which causes chlorosis in leaves and reduced photosynthesis and other metabolic activities. Several researchers and eminent investigators observed that higher salt concentration takes place near or immediate below the soil surface which significantly impaired the growth parameters of barley. They observed negative effect of salinity on growth and the development of barley in comparison with control treatment. Lower level of salinity upto 3 dS/m did not significantly influence the seed germination, whereas higher salinity level significantly decreased seed germination, plant height and total dry matter production. Irrigation with higher salinity levels significantly decreased tillers plant<sup>-1</sup>, spikes plant<sup>-1</sup>, 1000-grain weight, grain yield, straw yield, harvest index and leaf K: Na as compared to control treatment. Higher levels of salinity increased the total soluble sugars but decreased the protein and oil contents as compared to under non-saline conditions. EC and SAR of soil was increased with increasing levels of salinity resulting into decreased, but there was a substantial decrease in soil pH, K: Na ratio, P uptake, K content in the grain and straw as well as available N, P and K in soil.

**Key Words :** Barley, Growth, Quality, Saline water, Soil properties, Yield

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