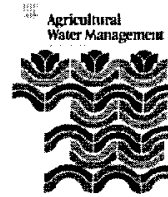




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Effect of sodium and nitrogen on yield function of irrigated maize in southern Portugal

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ABSTRACT

Salinization and nitrate leaching are two of the leading threats to the environment of the European Mediterranean regions. Inefficient use of water and fertilizers has led to a nitrate increase in the aquifers and reduction in crop yields caused by salts. In this study, a triple emitter source irrigation system delivers water, salt (Na⁺), and fertilizer (N) applications to maize (*Zea mays* L.). The objective of the study was to evaluate the combined effect of saline water and nitrogen application on crop yields in two different textured soils of Alentejo (Portugal) and to assess if increasing salinity levels of the irrigation water can be compensated by application of nitrogen while still obtaining acceptable crop yield. Maximum yield was obtained from both soils with an application of 13 g m⁻² of nitrogen. Yield response to Na⁺ application was different in the two studied soils and depended on the total amount of Na⁺ or irrigation water applied. No significant interaction was found between nitrogen and sodium, but a positive effect on maize yield was observed in the medium textured soil for amounts of Na⁺ less than 905 g m⁻² when applied in the irrigation water.

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