



Medicinal Chamomile (*Matricaria recutita* Linn.): A Commercial Crop for Salt-affected Conditions in Semiarid Regions of India

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Abstract

Water availability is a major constraint for crop production in arid and semiarid regions. Saline groundwater is only alternative resource for irrigation to make productive utilization of the uncultivated barren land of these regions. However, very limited options are available on selection of suitable salt-tolerant crops. Chamomile (*Matricaria recutita* Linn.), an annual winter season medicinal crop of commercial importance, may be considered for cultivation on salt-affected lands and using saline groundwater for irrigation. To assess the production potential of Chamomile under above set of conditions, four experiments were carried out in field, micro-plots and pots. Two field experiments, consisted of three modes of saline (~ 5 and 10.2 dS m^{-1} and their alternate use) water irrigation and four irrigation regimes (0.2, 0.4, 0.6 and 0.8 ID/CPE) of saline ($\sim 5.0 \text{ dS m}^{-1}$) water, were conducted at Hisar (Haryana) in north-west India. While micro-plot and pot experiments were conducted, in variable soil alkalinity and calcareous soil using different salinity water for irrigation, respectively; at Central Soil Salinity Research Institute, Karnal. It was observed that 3.0 to 3.6 Mg ha^{-1} fresh and 0.6 to 0.8 dry flowers, which yield essential oil of commercial importance, were harvested when irrigated with low ($\text{EC}_{\text{iw}} 5.0 \text{ dS m}^{-1}$) and high ($\text{EC}_{\text{iw}} 10.2 \text{ dS m}^{-1}$) salinity water. Decreasing IW/CPE (0.8, 0.6, 0.4 and 0.2) irrigation regimes of $\text{EC}_{\text{iw}} 5 \text{ dS m}^{-1}$ water decreased fresh flower yield from 3.8 to 1.6 Mg ha^{-1} . The crop fresh flower yield increased from 4.8 to 6.1 Mg ha^{-1} with increasing alkalinity (pH) of the soil from 8.4 to 9.8. Irrigation water salinity tolerance limit was established at $\sim 10\text{-}12 \text{ dSm}^{-1}$. Growth performance and nutrient compartmentation in different plant parts were also observed.

Key words: Chamomile, *Matricaria recutita*, Commercial crop, Growth performance, Saline irrigation, Sodic soil, Salinity tolerance limit