THE EFFECTS OF MIST IRRIGATION ON BIOLOGICAL AND PRODUCTIVE BEHAVIOUR OF GLOBE ARTICHOKE

Mauro R., Di Nicola M., Longo A.M.G., Mauronicale G.

Dipartimento di Scienze Agronomiche, Agrochimiche e delle Produzioni Animali - (DACPA)
Sezione: Scienze Agronomiche, via Valdisavoia, 5 - 95123 Catania (Italy); tel. +39095234415; fax +39095234449; e-mail rosario.mauro@unict.it

Globe artichoke [Cynara cardunculus L. var. scolymus (L.) Fiori] is a Mediterranean species, belonging to the Asteraceae family, which is commonly grown for the production of immature inflorescences (heads or capitula). It represents an important crop for several countries bordering the Mediterranean Sea, which together account for more than 80% of the world cultivated area. In Italy, which is the leading artichoke producer worldwide, globe artichoke is grown mainly in the southern region (Apulia, Sicily and Sardinia), where, thanks to the mild winters, forcing technique (summer plantation of semidormant offshoots, followed by frequent irrigation), as well as the cultivation of low chilling-requiring germplasm, growers are able to start the heads production from early autumn. Nonetheless, as a consequence of such a crop scheduling, artichoke plantlets experience unfavourable summer climatic conditions (high temperatures and low air R.H.) in the early stages, which frequently cause a significant reduction of crop establishment, as well as inducing head atrophy. All these phenomena have dramatic effects on the production of marketable heads, often persuading the growers to shift the time of artichoke plantation. The aim of this work was to evaluate the possibility to limit these drawbacks through the mist irrigation on three early-producing artichoke varieties (‘Spinoso di Palermo’, ‘Tema 2000’ and ‘Violet de Provence’).

Five minute periods of mist irrigation were carried out three times per day between 12.00 and 14.00, from September, 1 until November, 15. The mist irrigation caused an average reduction of the daily maximum temperature of about 1.7 °C, and an increase of the R.H. of about 1.3%. Such modifications, averaged over genotypes and compared with untreated test, significantly increased the percentage of plantlets established (84.0 versus 72.3%), and reduced the percentage of atrophic heads (11.0 versus 20.3%), so increasing the production of marketable heads plant⁻¹ (7.5 versus 6.9). Such effects had positive repercussions on the final marketable yield, which, compared to control, underwent an average increase of 25.7% (62,267 versus 49,553 heads ha⁻¹). Significant ‘genotype x mist irrigation’ interactions were observed on several parameters.