

## ALTERNATIVE NURSERY MANAGEMENT SYSTEMS: CLOSED-LOOP AND HIGH RETENTION MAT.

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Current container-grown plant production practices utilize high volumes of both irrigation and fertilization to maximize plant growth. Inefficiencies of these management practices may lead to high chemical externalities, with environmental damage. Moreover in the next future the water availability for nursery irrigation is destined to decrease. As a consequence the nursery industry has to increase water use efficiency for plant production. In order to test different nursery management systems an experiment was conducted at Fondazione Minoprio (Vertemate con Minoprio, Como, Italy; 45°44' N, 9°04' E) in 2006. 9000 plants of three cultivars of *Rosa hybrida* (cv 'Cubana', 'Innocentia' and 'Pink Emily') were cultivated in 1,5 litres containers. Three different nursery management systems, realized in three nurseries of 300 m<sup>2</sup> each-one, were compared. The first nursery was managed in a traditional way: overleaf irrigation with static sprinklers and without water recovery. Plants in the first nursery were fertilized with a controlled-release fertilizer added to the root medium. The second nursery was a closed-loop system: overleaf irrigation with static sprinklers and recover of the excess of solution in a 50 m<sup>3</sup> artificial basin for reuse. Plants in the second nursery were fertirrigated. The third nursery was realized with a high water retention mat (Aquamat<sup>TM</sup>), in which the solution is served out directly in the mat and released to plants by capillarity. Water consumption for each nursery was recorded weekly during the trial and at the end of the experiment both shoot and root biomass were measured. For each cultivar shoot biomass resulted higher where the retention mat was used, while no differences were observed between traditional and closed-loop management. Greater root biomass was observed where the traditional management was used. The closed-loop system allowed 11% of water saving, while the sub-irrigation system allowed to save 40% of water if compared to the traditional system.