

Abstract:

Rocket is an important leafy vegetable in Mediterranean countries and is mainly used to flavor salads. Soil grown rocket usually contains high level of nitrate about 7000-8000 mg kg⁻¹ (ppm) and during the winter period this value can easily overcome 9000 ppm. Rocket was used in our experiments as a model system for studying new technologies for reducing nitrate content in preharvest and postharvest stages. Experiments carried out as pre-harvest strategies were focused on comparisons between soil cultivation and floating systems with and without oxygen (respectively 6 and 1.5 mg L⁻¹). Reduction of oxygen level was induced by nitrogen bubbling through the nutrient solution one week before harvest, and its effect on the nitrate accumulation in rocket leaves was evaluated. During postharvest life, the rocket was stored at 5 °C under 150 μmol m⁻² s⁻¹ light with 12 h photoperiod or darkness. Nitrate and nitrite content were measured at harvest in all growing systems. In the postharvest stage the effect of treatments was evaluated by measuring nitrate and nitrite content, nitrate reductase activity and chlorophyll. Results showed that soil-grown rocket accumulated a higher amount of nitrate and gave lower yields than floating systems did. On the contrary, rocket grown in the floating system without oxygen showed lower nitrate content. During postharvest life the rocket stored at 5 °C under light had lower nitrate content, with nitrate reductase activity (NR, EC 1.6.6.1) decreasing during the first 4 days of storage. The chlorophyll content did not show any significant reduction during storage.