

### Abstract:

The ingestion of excessive amounts of nitrate can cause adverse health effects. In the dietary intake of nitrate, between 70 to 90% comes from vegetables and maximum acceptable nitrate levels have been established. It is known that levels of nitrate fertiliser affects the nitrate content of several vegetable crops. However, knowledge about effects of postharvest treatments on the nitrate content changes is scarce. In this work the effect of two N fertiliser rates on the nitrate content of harvested celery was studied. In addition the final nitrate concentration of derived celery sticks stored for 21 days at 4°C in controlled atmosphere (CA) and in air was evaluated. Quality and sensorial attributes changes were also monitored. 'Istar' celery plants were grown on an inert substrate in a plastic greenhouse where, after the first month of cultivation, two treatments were applied: a 25% reduction in N concentration (RN), keeping the remaining nutrients at the common standard levels, and a control (CN) with no reduction in N level. Plants were hand harvested, selected and processed in a clean room at 10°C. Petioles of uniform size were cut into 12 cm sticks, washed, drained and stored in hermetic glass jars. Continuous humidified flows through of either air, 5% O<sub>2</sub> + 5% CO<sub>2</sub> and 5% O<sub>2</sub> + 15% CO<sub>2</sub> (both of them in nitrogen) were applied. At harvest, mean nitrate contents were within the acceptable levels for both NC and NR treatments. However, a positive correlation between rate of N fertiliser and nitrate contents was found. After cold storage a general decrease in nitrate content was found. Compared to air, CA resulted in sticks with lower nitrate content, better sensory quality and no decay development. No significant differences between both CA were found. As main conclusion, from a nutritional point of view, celery grown under 25% lower nitrate fertiliser should be preferred. Under both CA safer celery sticks were obtained.