ARC
Training Centre for Innovative Horticultural Products

Extending the shelf life of ready-to-eat salad

Key Points

- Baby leafy salad vegetables are highly nutritious
- Both pre-harvest and post-harvest factors affect shelf-life and quality of produce
- Extending shelf life is important in order to increase produce availability and minimise losses
- Cold chain management along the supply chain is key in shelf-life extension

Introduction

Baby leafy salad vegetables include spinach, rocket, mizuna, tatsoi and lettuce.

The consumption of baby leafy salad vegetables is increasing in Australia because they are highly nutritious, ready-to-eat and are available all year round.

However, they are highly perishable with a shelf life of ~10 days at 4 °C.

Getting high quality fresh produce to market is a key concern of the Australian Research Council (ARC) Industrial Transformation Training Centre for Innovative Horticultural Products.

The Training Centre is a collaboration between the ARC, the University of Tasmania and major Australian industry partners including Woolworths and Houston's Farm.

Training Centre and University of Tasmania PhD candidate Vongai Dakwa aims to increase the shelf life of ready-to-eat baby salad leaves by 20 per cent using innovative post-harvest technologies and strategies, while guaranteeing the same level of product safety that is currently achieved.

Nutritional information

- Baby leafy salad vegetables are rock stars — they top the charts in vitamins A, C and K, potassium, magnesium, folic acid and dietary fibre.

- They are also high in phytochemicals, such as carotenoids and phenolic compounds, which can help reduce the risk of diabetes, cancer, obesity and cardiovascular disease.

- Leafy vegetables are low in calories — only 5 to 40 calories per cup.

Factors affecting shelf life

Pre-harvest factors: Type of cultivar, growing conditions such as plant density, climate, nutrient and water management, soil conditions, weed control and pest management.

Post-harvest factors: Harvesting practices, handling, storage conditions (relative humidity, atmospheric composition), temperature management, processing/sanitisation and packaging.

How do we assess quality? We measure respiration rate, changes in colour and texture, chlorophyll content, vitamin C, sensory evaluation, and microbiological quality.

Core areas of research

- Investigating the use of sanitiser and surfactant on grit removal, microbiological quality and shelf-life of spinach and coral.

- Improving temperature management along the supply chain from harvest to the distribution centre.

- Exploring the suitability of vacuum cooling for baby leafy salad vegetables, potential shelf life benefits and possible risks.

Other PhD Projects in the ARC Training Centre

- Improving the quality & shelf life of fresh-cut fruit

- Re-assessing organic standards

- Reducing potato greening

- Extending the shelf-life of cherries

- Banana supply chain damage

More information: utas.edu.au/arc-training-centre