

## Extending Shelf-Life with NASA Technology

Temperature, humidity, and air quality are the key factors affecting the shelf-life and quality of fresh produce. Undesirable odours, microorganisms (such as bacteria, mould, and fungi), and ethylene gas can alter the quality of the air, thus shortening shelf-life.

Ethylene gas is a naturally occurring ripening agent in certain types of fresh produce, and can accumulate in food warehouses and cold stores. Ethylene-sensitive produce such as berries, asparagus, broccoli, and lettuce will ripen and deteriorate more quickly when they come into contact with this gas.

This problem is compounded by the fact that fresh fruits and vegetables are fast-moving goods, and operators may not find time between consignments to clear and decontaminate their premises.

To overcome the adverse effects of ethylene accumulation, various air purification systems have been developed to help improve air quality. One such system, called Airocide, adopts a technology developed by NASA to purify air using photocatalytic oxidation and ultraviolet light.

With support from AVA, this system was tested by Ban Choon Marketing Pte Ltd (Ban Choon) for its effectiveness in maintaining the air and fresh produce quality and extending the shelf-life of strawberries and romaine lettuce. Strawberries and romaine lettuce could last three to five days longer when stored in chillers installed with Airocide. The extended shelf-life translates into cost savings due to the reduction in food spoilage.



*An AVA officer (left) assists Ban Choon in monitoring the effects of the air purification system on improving the shelf-life of fresh produce in its store.*

Besides adopting advanced air purification technology, the industry should also observe good management practices such as segregating ethylene-sensitive types of produce from ethylene-producing ones. Good cold chain standards will also help to ensure that food stays fresh for as long as possible.



*Ban Choon uses an air purification system developed using NASA technology to reduce the amount of ethylene gas in its store.*