



Bluezone™ - Second trial with Kiwifruit, May 2012

This test was conducted to confirm earlier evidence that the Bluezone™ technology reduced ethylene under normal working conditions.

Method:

The test was conducted using two identical cool rooms A and B in a fresh produce warehouse in Melbourne. These are two identical rooms opening off the main warehouse. These rooms have a capability to store 80-100 pallets of produce. Both rooms were loaded with the same quantity of kiwifruit sourced from the same imported shipment originating in New Zealand. Room B contained two Bluezone™ 2400 Fresh Preservation Technology units (based on the air volume of the room) installed at floor level in one corner. Room A was without Bluezone™ technology. Both rooms are equipped with identical temperature controllers, refrigeration units and with quick action doors to limit loss of cool air and the entry of external VOCs or warm air.

As these are working storage rooms any removal of fruit from one room had to be matched by the removal of fruit from the other.

Ethylene concentration was measured at the beginning of the trial using a *ppmRAE Plus* instrument calibrated for ethene in the range 0-10ppm (Model PGM-7240; Serial No. 250-101174). Both rooms were found to have near identical readings at the time of loading. The results below were taken approximately 72 hours after loading.

Results:

Criteria	Main warehouse	Room A	Room B
Fruit		kiwi	kiwi
Number of pallets	-	22	22
Temperature - setting	-	0.5°C	1.5°C
Temperature - actual	19°C	0.5°C	1.5°C
ppb Ethene range	30-40ppb	130-220ppb	60-140ppb
ppb Ethene typical	30ppb	170-180ppb	90-100ppb

Discussion on results

The readings showed a low level of detected ethylene or other VOCs in the main warehouse at the time of checking. This was attributed to reduced forklift and other vehicle activity at that time of day.

Ethylene readings in the Room B with Bluezone™ technology installed were significantly lower than in Room A without any ethylene scrubbing.

With Room B running 1°C hotter than Room A it is expected that ethylene emission from the fruit in Room B could exceed that of fruit in Room A.

Conclusions

Earlier tests had shown that the Bluezone™ technology was capable of rapidly reducing ethylene levels in storage rooms. The results obtained from this test show that the Bluezone™ technology -

1. Has the potential to maintain ethylene levels below that of a 'control' where no Bluezone technology is used.
2. is capable of maintaining that lower ethylene level with the temperature 1°C higher than the current best practice storage temperature of 0.5°C.

Based on the results it is expected that kiwifruit could be stored for a period of time longer than currently possible due to the reduction in ethylene. In addition, it is suggested that storage temperatures could be raised by approximately 1°C providing a significant saving in energy costs without compromising shelf life.