



## ECTOL Post Harvest Apple Firmness Trial – 2010

The trial was conducted at the property of R. W. Squibb and Sons Pty Ltd, 26 Sheffield Rd. Spreyton Tasmania and was supervised by Dr Mike Walker, Consultant Plant Physiologist.

**Background:** The apple is a climacteric fruit and therefore continues to ripen and soften, after harvest, producing ethylene and  $\text{CO}_2$ . A number of international trials have been conducted suggesting that seaweed extracts improve the firmness of many fruits when applied preharvest.

Ectol is a broad-range liquid foliar nutrient and stress protectant containing seaweed extracts, amino acids, organic acids, sugars and minerals. Field experience suggested an improvement to post harvest apple firmness, if Ectol was applied as a spray to the apples during the month before harvest.

**Ectol Apple Trial:** The trial sought to measure the firming impact of Ectol on apples, when held at room temperature after removal from cold storage.

Royal Gala apples were sprayed 4 times at the rate of 7.5L/ha on the 2<sup>nd</sup> Feb, 12<sup>th</sup> Feb, 22<sup>nd</sup> Feb and the 27<sup>th</sup> Feb, with the last spray being 4 days before harvest.

The apples were harvested on the 3<sup>rd</sup> of March

Apples were selected from 25 four year old trees, every fourth tree in a row of 100. For each tree, two were selected from the north side, comprising one from the bottom branch and one from the highest branch, as far as possible the same size, to give a total of 50. This was repeated on the south side to give two cartons of 50, a total of 100.

After harvest the apples were stored in the cool room and removed after 6 days and thereafter held at shed temperature, which varied from 15 to 25 °C. From each carton 10 apples were tested with a penetrometer, just after harvest and on 6,9,13 and 16 days post harvest.

The trial sought to measure variation in apple pressure, pressure averages and importantly the percentage of apples not meeting the Woolworths standard minimum allowable pressure of 6.5kg.

## Results Summary:

### 1.0 Comparative Treatments over Time:

- 6 days after harvest:
  - Treatment Average: 9.9kgs
  - Control Average: 9.3kgs
  - Increase on treatment: 6.5%
  
- 9 days after harvest:
  - Treatment Average: 9.15kgs
  - Control Average: 8.9kgs
  - Increase on treatment: 2.8%
  
- 13 days after harvest:
  - Treatment Average: 9kgs
  - Control Average: 8kgs
  - Increase on treatment: 12.5%
  
- 16 days after harvest:
  - Treatment Average 8.2kgs
  - Control Average: 7.7kgs
  - Increase on treatment: 14.7%

Treated apples showed a consistent improvement in firmness and two weeks after harvest following a week in cold storage and about a week in ambient conditions; treated apples were 14.7% firmer than untreated apples.

### 2.0 Changes over time; apple pressure compared to the ex-coolstore pressures:

Control showed a 23% reduction in average apple pressure a week after removal from the cool room. Treatment showed a 17% reduction in average apple pressure after removal from the cool room.

### 3.0 Percentage of Apples not Meeting the Woolworths minimum firmness of 6.5kg:

**Control:** 35 % of the control apples were 6.5kgs or less and would therefore be rejected by Woolworths.

**Treatment:** No apples showed pressures less than 6.5kgs.

**Conclusion:** The spaying of Ectol in apples during the month prior to harvest resulted in a 14.7 % increase in apple firmness 2 weeks after harvest with no apples falling below the Woolworths minimum pressure standard of 6.5kg as compared to the control where 35% would have been rejected.