Apple water core
– a seasonal problem

Stephen Tancred
Stanthorpe 14th June 2011
**SCORING AND MANAGING WATERCORE**

**Red Delicious**

1. No visible watercore.

2. Vascular bundles swollen to between diameter of pencil lead to pencil eraser.

3. Vascular bundles swollen to the size of a pencil eraser and larger but nothing touches—no between vascular bundles nor between vascular bundles and the core.

4. Two vascular bundles touch each other or a vascular bundle contacts with watercore expanding from core.

5. Pineapple type
   - On several vascular bundles either touch each other or the core.

**Fuji**

1. No visible watercore.

2. Vascular bundles swollen to between diameter of pencil lead to pencil eraser.

3. Vascular bundles swollen to the size of a pencil eraser and larger but nothing touches—no between vascular bundles nor between vascular bundles and the core.

4. Continuous areas of watercore resemble “star” shape.

5. Pineapple type
   - Watercore is showing in significant, heavy amounts all the way out to the peel.

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**Proposed Watercore Scoring Chart and Scoring Apples with Watercore**

In conjunction with several apple producers, Agrofresh is proposing a tool for watercore scoring geared for Red Delicious and Fuji. In deciding whether to use SmartFresh technology it is crucial to understand watercore, the following considerations should be taken into account:


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The use of this watercore discriptor is not compatible between SmartFresh and conventional apples, and so internal bruising developed in either environment.

Similar results were obtained in Fuji held for approximately 7 weeks in RA storage. At the end of storage, the moderate and severe watercore had disappeared, while the condition of the SmartFresh fruit was visually unchanged from harvest pressure tests and care pounds firmer than comparable untreated apples.

For more information call your Agrofresh Account Manager or call 1 866 206 1001.
What is water core?

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- Flooded air spaces between cells with sorbitol solution.
- Flooding looks water soaked.
- Starts around ‘plumbing’
- Red Dels and Fuji mainly, Sundowner and Granny Smith also
Why be concerned?

- Considered a defect by chain stores when severe.
- May develop into breakdown in cold store (not on the shelf) only if moderate or severe.
- More with Dels than Fuji.
- Water core fruit sensitive to CO$_2$, as internal air spaces full of liquid and CO$_2$ can’t easily dissipate. Worse in CA.
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- Heat waves eg Southern Aust 2009
- Worse on low calcium fruit, trees with lighter crops and vigorous trees.
- Worse on fruit exposed to most heat and sunlight.
How can I deal with water core?

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- ReTain can delay & reduce the development.
- Do not CA water core fruit and move it quickly.
- Delayed cooling can reduce severity and mild water core may disappear with 2-3 m storage.
- The apple (still alive) can reabsorb sorbitol - warmer temps the re-absorption rate is higher.
- CA slows down apple’s metabolism and re-absorption of sorbitol is slowed.
- Delayed cooling, warmer storage & no CA allows ethylene driven ripening - use SmartFresh to stop this.
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• Monitor fruit each week for 6 – 8 weeks. • If it clears it may be put under CA, if not then start selling
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