Technical Note

TYPICAL APPLE FRUITLET & FRUIT MINERAL LEVELS

This technical note has been created as an adjunct to Technical Note – Apple Fruitlet Analysis, which describes the rationale for using fruitlet testing as an aid to managing risk of nutrient-related storage disorders in apple.

Some varieties of apple are particularly susceptible to post-harvest disorders, such as bitter pit, when their mineral composition is out of balance. Calcium is thought to be one of the key minerals affecting these disorders, but other minerals will also have a role.

Table 1 describes typical mineral content for various sized apple fruitlets (non-specific for variety) and Table 2 describes typical mineral content for near harvest-stage apple (non-specific for variety). These levels are generalised and may differ to data held in agronomy models, but are provided as a guideline to support users of Hill Labs apple fruitlet and fruit testing service.

	Apple Fruitlet by size						
Analyte (units) [all as recvd]	**27-30g**	**31-34g**	**35-38g**	**39-45g**	**46-65g**	**66-120g**	**>120g**
Nitrogen (mg/100g)	90-125	85-120	85-115	85-115	65-110	50-70	45-60
Calcium (mg/100g)	10-14.5	9-13.5	9-13	8.5-12.5	7-11	6-8	5-7
Magnesium (mg/100g)	7-11	7-10	7-10	7-9.5	6-9	4.5-5.5	4-5
Potassium (mg/100g)	125-170	120-160	120-160	120-160	115-150	100-120	90-110
Phosphorus (mg/100g)	13-20	13-17	13-17	13-17	11-17	11-13	10-12
Iron (mg/kg)	2-4	1.5-4.0	1.5-3.5	1.5-3.5	1.5-3.5	1.5-3.5	1.5-3.5
Boron (mg/kg)	2-4	2-4	2-4	2-4	2-4	2-4	2-4
Copper (mg/kg)	0.3-0.8	0.3-0.8	0.3-0.8	0.3-0.8	0.3-0.8	0.3-0.8	0.3-0.8
Manganese (mg/kg)	0.4-1.2	0.3-1.0	0.3-1.0	0.3-1.0	0.3-0.9	0.3-0.9	0.3-0.9
Zinc (mg/kg)	0.7-2.0	0.6-2.0	0.5-1.5	0.5-1.5	0.4-1.2	0.4-1.2	0.4-1.2

Table 1: Typical apple fruitlet mineral levels by size (mean weight). Varietal differences may affect interpretation.

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Analyte (units) [all as recvd]	Apple Fruit (130-250g)
Nitrogen (mg/100g)	30 - 60
Calcium (mg/100g)	4.5 - 7.0
Magnesium (mg/100g)	4.0 - 5.0
Potassium (mg/100g)	90 - 120
Sodium (mg/100g)	0.7 - 1.2
Phosphorus (mg/100g)	9 - 12
Sulphur (mg/100g)	2 - 4
Iron (mg/kg)	0.9 -1.3
Boron (mg/kg)	1.8 - 3.0
Copper (mg/kg)	0.3 - 0.5
Manganese (mg/kg)	0.3 - 0.7
Zinc (mg/kg)	0.2 - 0.8

Table 2: Typical apple fruit mineral levels for one size (mean weight). Varietal differences may affect interpretation.

Notes:

- The fruitlet and fruit mineral ranges shown are sourced from Hill Labs database, and may not be definitive.
- Mineral data from different varieties are not known to Hill Laboratories at the time of writing.
- The units for trace elements are shown as mg/kg, being the convention for the method used. For users who are more familiar with mg/100g, then dividing the mg/kg value by 10 will provide this.
- These mineral levels are from analysis of apple fruitlet and fruit on a “whole fruit” basis i.e. includes skin, flesh and core/pips.
- Values are shown on an “as received” basis i.e. fresh fruit. For results on a dry weight basis, an additional dry matter test would be needed for conversion.
- The related Technical Note – Apple Fruitlet Analysis is available on request or can be found in the Client Resources/Technical Note section of the Hill Labs website www.hill-laboratories.com.

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