

# (6) Interpreting leaf analysis

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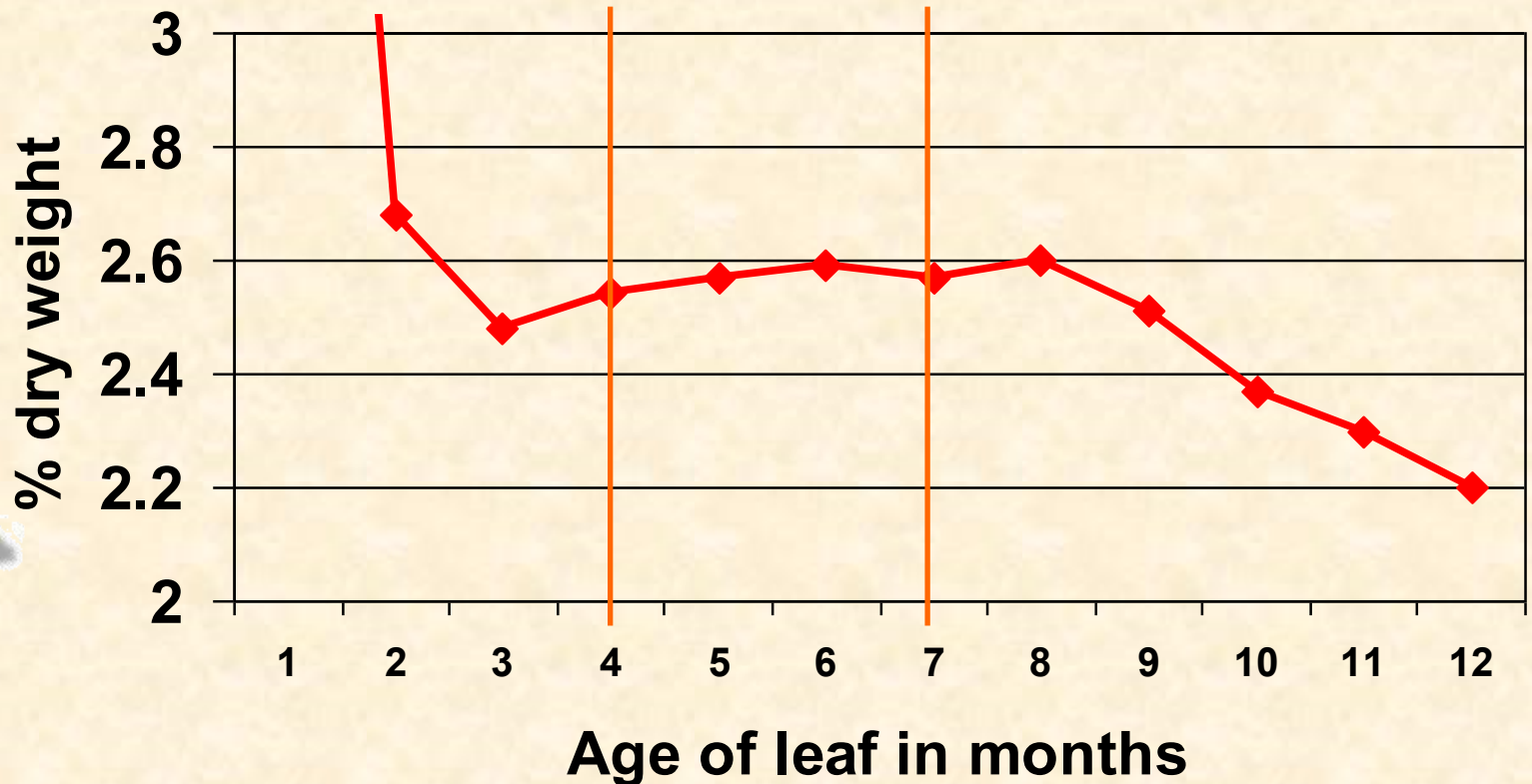
# Interpretation

- Only a guide
  - Best tool for showing what nutrients are getting into the tree
  - Increased power of data by comparing trends from numerous years
- Developed in USA by conducting many tests on blocks & research trials (1940s +)

# Why 4-6 month age leaf

## Percent nitrogen for Age of leaves

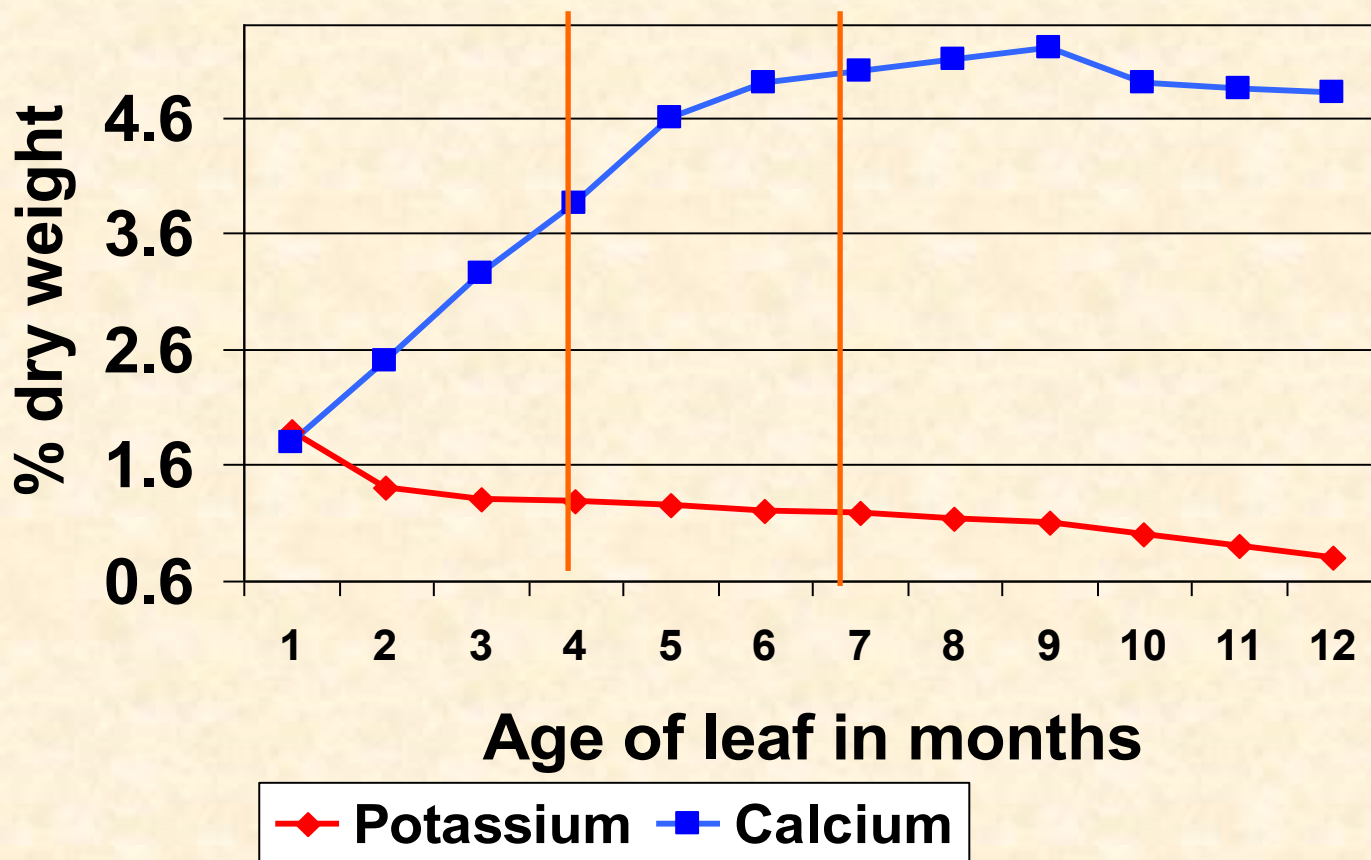
(After Embleton, 1973)




# Why 4-6 month age leaf

## Percent Potassium & Calcium for Age of leaves


(After Embleton, 1973)





# Leaf analysis interpretation

- Need to make sure correct age of leaf picked
  - Calcium is a good indicator – high Ca old leaf, low Ca young leaf
    - Further supporting evidence from N & K leaf levels



# Other factors

- Rootstock will affect nutrients
  - Trifoliolate accumulates Cl
  - More of an effect on micro nutrients than macro ( Smith et.al. 1948)
    - i.e. Citrange and Tri have less Zn & Mn than Cleo
  - Keep in mind nutrient antagonism to help explain possible irregularities

# Navel Leaf Analysis Interpretation chart

Updated ranges in **bold red**

Element	Deficient range <sup>(a)</sup>	Low range	Satisfactory range	High range	Excess range
		As percentage of dry matter of leaf			
Nitrogen <sup>(b)</sup>	Below 2.20	2.20– <b>2.5</b>	<b>2.5–2.9</b>	<b>2.9–3.1</b>	Above <b>3.1</b>
Phosphorus	Below 0.10	0.10–0.13	0.14–0.16	0.17–0.30	Above 0.30
Potassium	Below 0.40	0.40– <b>1.1</b>	<b>1.1–1.50</b>	<b>1.5–2.00</b>	Above 2.00
Calcium	Below 1.60	1.60–2.90	3.00–5.50	5.60–7.00	Above 7.00
Magnesium	Below 0.16	0.16–0.29	0.30–0.69	0.70–1.00	Above 1.00
Sodium			Below 0.16	0.16–0.25	Above 0.25
Chlorine			Below 0.30	0.30–0.60	Above 0.60
Sulphur	Below 0.14	0.14–0.19	0.20–0.39	0.40–0.50	Above 0.50
As mg/kg (parts per million) dry matter of leaf					
Manganese <sup>(c)</sup>	Below 16	16–24	25–100	100–300	Above 300
Zinc <sup>(c)</sup>	Below 16	16–24	25–100	100–200	Above 200
Copper <sup>(c)</sup>	Below 3	3–5	6–15	16–20	Above 20
Boron	Below 21	21–30	31–129	130–260	Above 260



# Interpretation

- Recommended to conduct a separate round table workshop looking at leaf analysis results
- Booklet of interpretation guide is on the ACG website
- Separate “Which leaves to pick?” workshop
- [www.australiancitrusgrowers.com](http://www.australiancitrusgrowers.com)
  - resources





# References

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