


Rind texture: factors principles & survey

NSW DPI citrus roadshow 2017

A navel orange rind investigation

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Rind texture: Principles

Factors affecting rind texture

- Variety
- Budlines
- Crop load
- Nutrition
 - Strong relationship between rind texture and nutrition: established in research 1950's +
- Irrigation: nutrient leaching
- Other unknown factors: soil type, seasonal temperatures ?

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Rind texture: Nutrition

Nutrient factors affecting rind texture

- **N** – increases peel thickness and coarseness, increases acidity
- **K** - Similar effects to nitrogen, but not as strong
- **P** : Thins out the rind and helps to balance effect of N, to a degree

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Table 1: EFFECT OF INCREASING NITROGEN, PHOSPHORUS AND POTASSIUM LEVELS IN THE LEAVES ON THE QUALITY OF THE FRUIT. *

	N		P		K	
	Low	High	Low	High	Low	High
Fruit Size	↘	↗	↘	↗	↘	↗
Number of Fruits	↔	↔	↔	↔	↔	↔
Production	↔	↔	↔	↔	↔	↔
Rind thickness	↗	↘	↗	↘	↗	↘
Juice (%)	↘	↗	↘	↗	↘	↗
Solids (TSS)	↔	↔	↔	↔	↔	↔
Acidity (%)	↗	↘	↗	↘	↗	↘
Brx:Acid	↗	↘	↗	↘	↗	↘

(→ = increasing; ↘ = decreasing; ↔ = insignificant changes)

Du Plessis, S.F.; Koen, T.J. 1988. The effect of N and K fertilisation on yield and fruit size of Valencia. Citriculture-Sixth international-citrus-congress, Middle-East, Tel-Aviv, -Israel, -6-11-March-1988-Volume-2.; 663-672

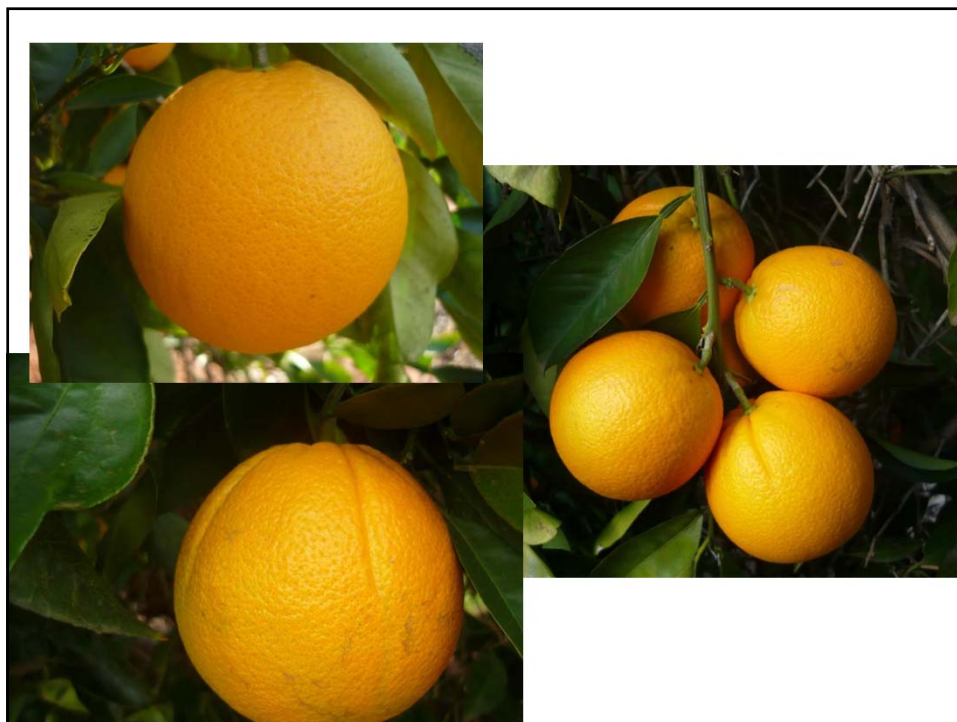
Rind texture: Survey

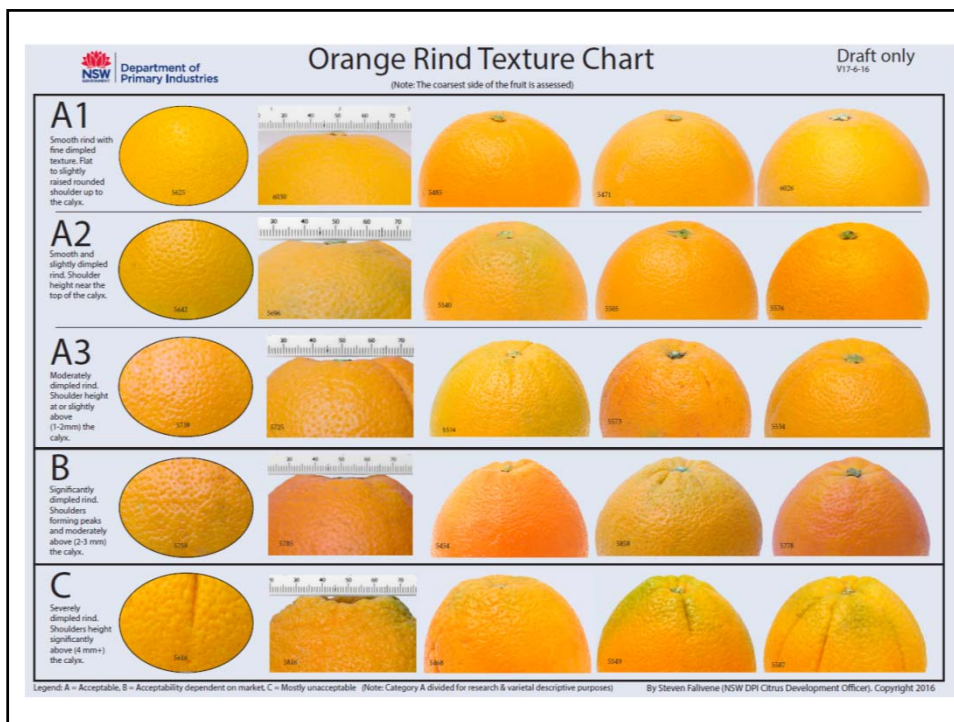
Why is Riverina rind courser than Riverland and Sunraysia rind?

- 2016 on Navel oranges
- Compared 32 blocks in Riverina, Sunraysia and Riverland for associations between nutrition and rind texture



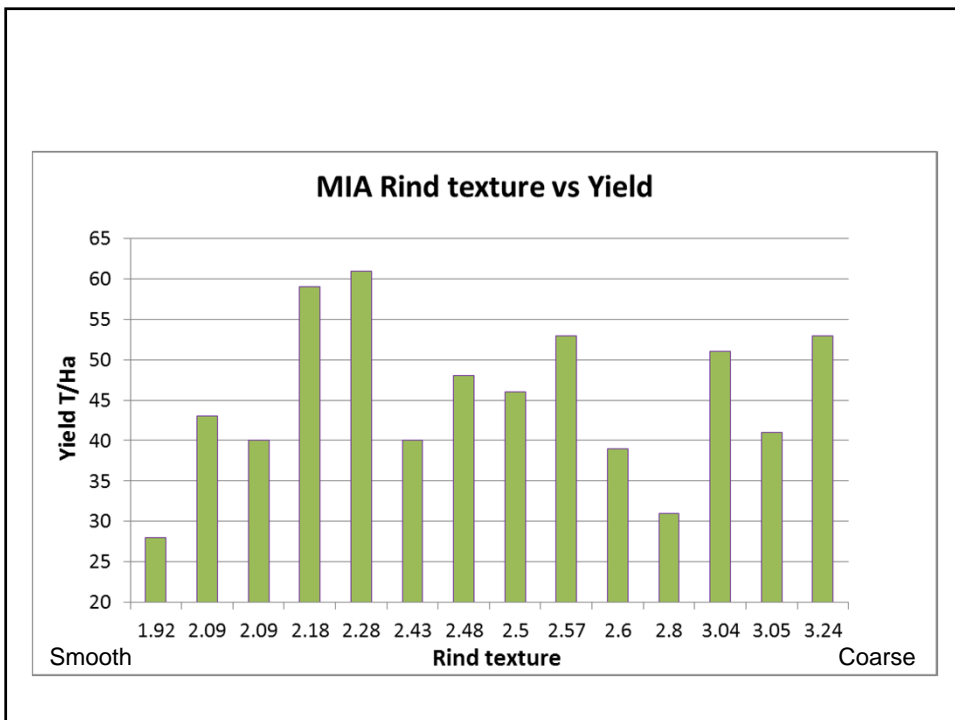
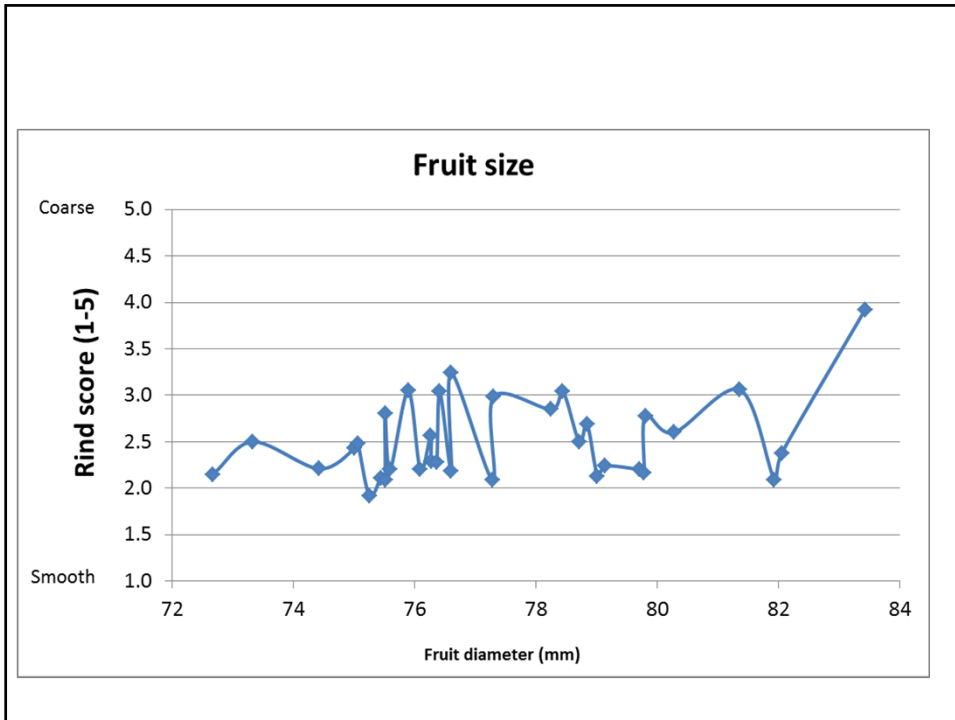
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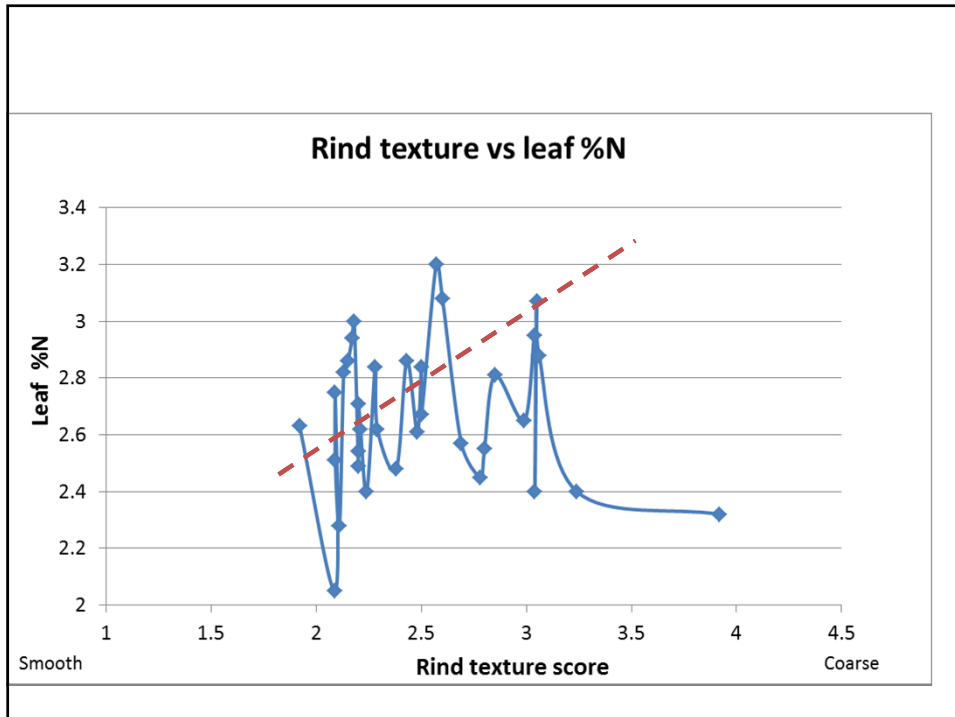
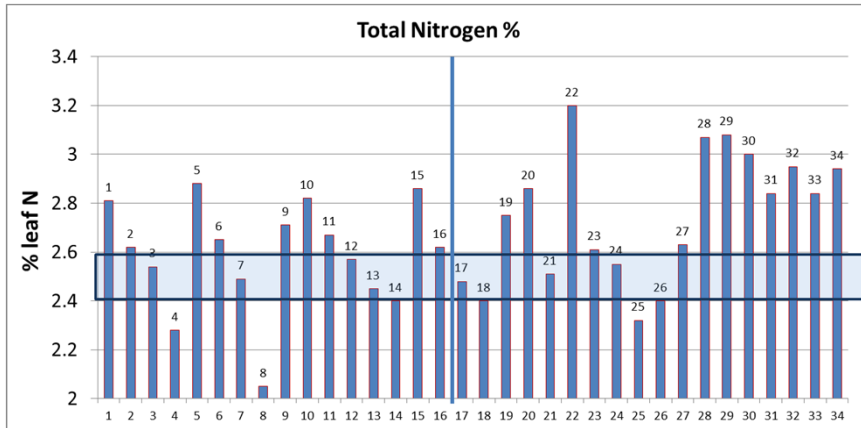


Is there a difference?

	Rind texture average results		
	No. sites	Rind texture	4% correction
Riverina	15	2.5	2.5
SA	6	2.6	2.5
Sunraysia	11	2.4	2.3

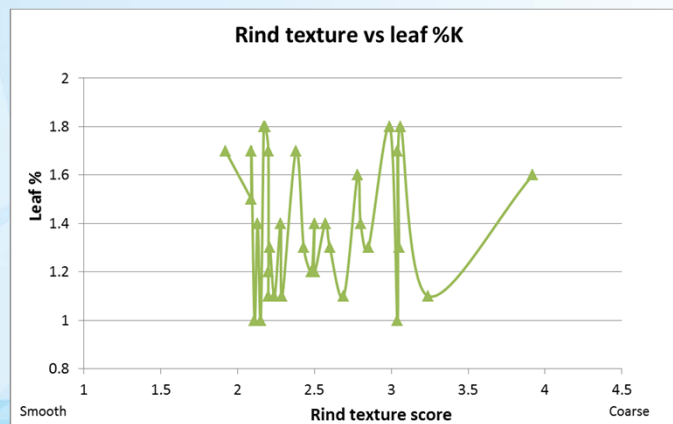


Leaf nitrogen – March sampling



Rind texture: Survey

- No association between phosphorous and potassium for leaf %, yield



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Rind texture: Survey

Conclusion

- Nutrition **does** affect rind texture, but can not compare blocks for rind texture and nutrition
 - Other factors affect rind coarseness
- **Key:** monitor each block separately and make customised nutrition programs
 - Different blocks require different nutrition programs to achieve similar rind texture
 - Historical data: nutrition application, leaf tests, yield & rind texture
 - Estimate crop load in December – fertilise accordingly

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