Advances in mango production: 2019

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NORTHERN TERRITORY GOVERNMENT

Activities and partners

- Nitrogen and calcium (MpfN and ACIAR)
- Resin canal (UTAS/ARC/Woolworths)
- Dieback (Grower collaborators)
- Flower manipulation (ACIAR/HIA/NESP/Grower collaborators)
- Quality (Corporate partners/ACIAR)

Early history of the Northern Territory mango industry

Hobby farms, 1980

Grower Bodies

Production systems

South-east Asian growers

Corporate/New Varieties

Consumer focus

Rationalisation

1,854t

30,373t

1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

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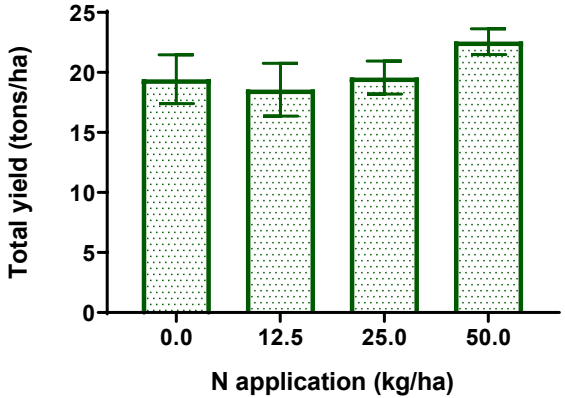
Nitrogen and calcium

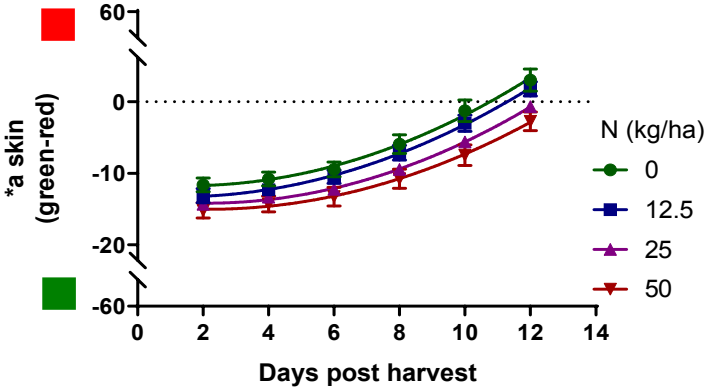
- Key nutrients for mango yield and fruit quality
- Nitrogen is both phloem and xylem mobile
- Calcium is non-phloem-mobile

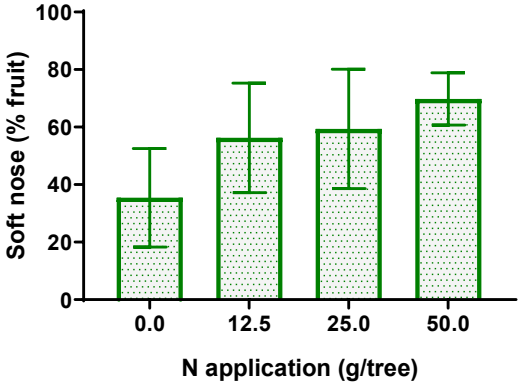
Nitrogen and calcium

Nitrogen

- 250 tree/ha
- 6kg/ha KNO_3
- Additional N applied as ammonium sulphate
- Applied after harvest and during active growth
- Fruit harvested 2-18th Oct 2018







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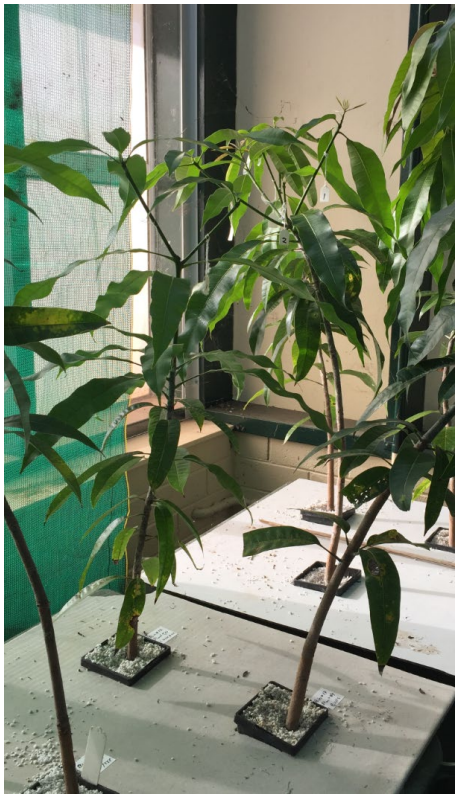
Nitrogen and calcium

Calcium

- Non-phloem-mobile
- Present in litter
- Baseless recommendations and products
- Monitoring relocation in pot trials



Resin canal discolouration

- RCD is an infection
- Infection can occur at all stages of the supply chain
- May be transmitted by handling fruit
- Difference between Darwin and Katherine
- Not all cultivars susceptible
- **Still need to know:**
    1. Mode of infection
    2. Source of inoculum
    3. Control measures
    4. Managing cross contamination
- Training for growers, packers, transporters and marketers

Dieback

- Mapped locations
- Isolated candidate fungal and bacterial pathogens
  - Verifying pathogenicity
- Developed communication strategy
  - Newsletter
  - Engaged with chemical suppliers
  - Partnered with grower bodies
- <u>Looking to industry to prioritise</u>

First samples collected in Darwin - 15 June 2018

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Field survey - 21 November 2018

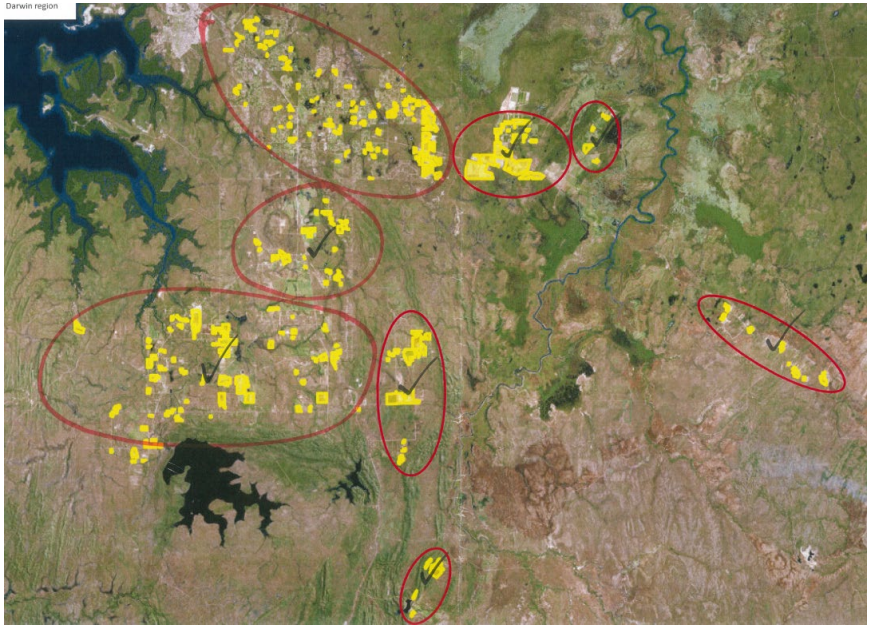
Subsequent surveys

18 December

16 January

8 February

18 March



AUSTRALIAN MANGOES®

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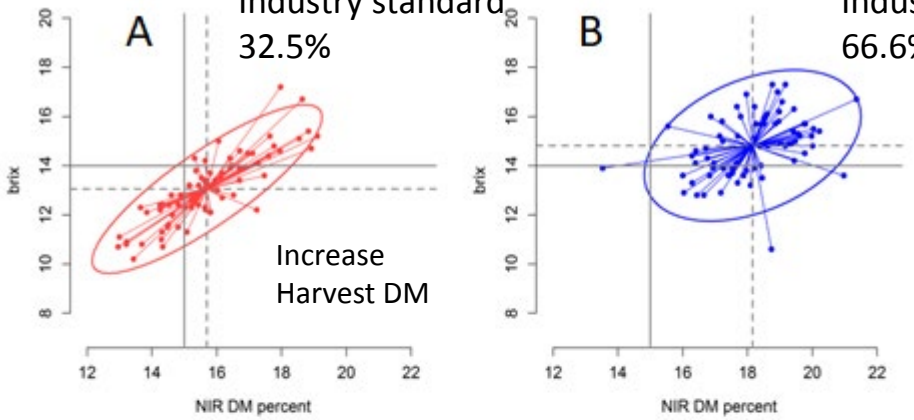
Quality

Using Non-destructive near-infra technology to investigate mango quality

- Reassessing industry standards of dry matter and brix
- Understanding relationship between brix and lenticel development
- Understanding the effects of gamma irradiation on fruit quality
- VHT control of stem end rot

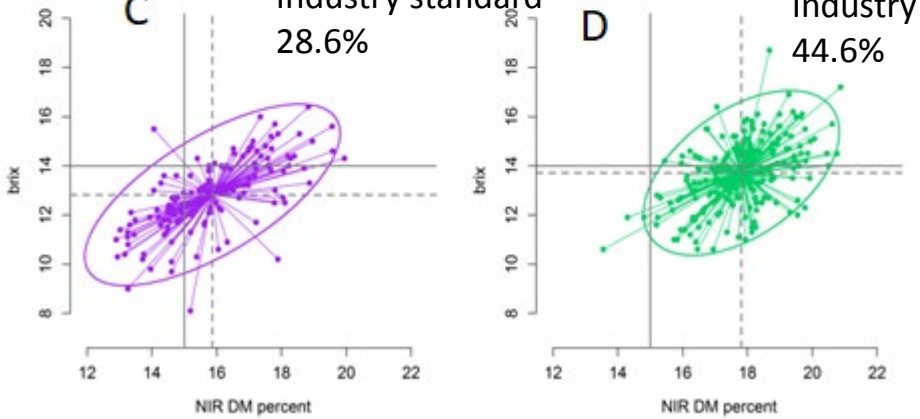


Industry standard
32.5%

Increase
Harvest DM

Industry standard
66.6%

There is more to mango maturity than 15% dry matter and 14º brix to get repeat purchases



Industry standard
28.6%

Industry standard
44.6%

Both 50:50
> 14ºBrx

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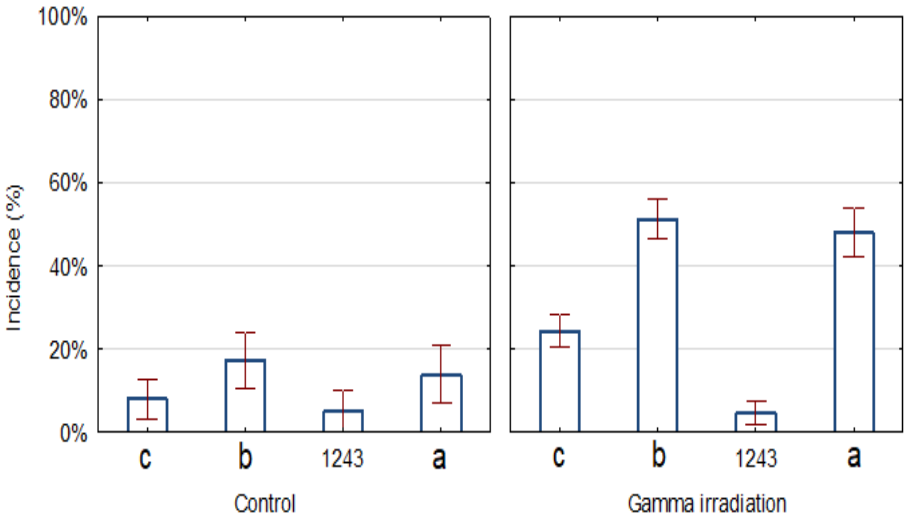
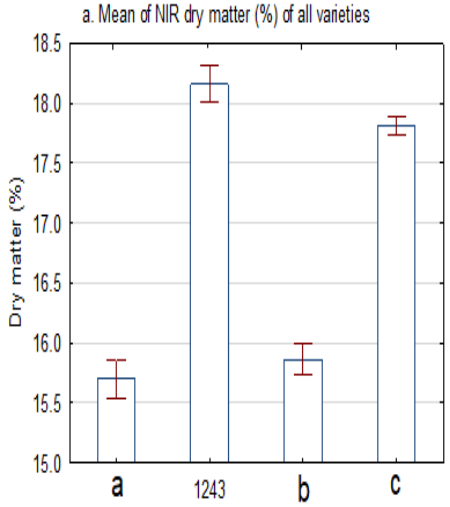
Irradiation and lenticels





γ Irradiation dose (*Gy*)

		1	2	3
Level 4	1	783	479	768
	2	928		967
	3	877	457	941

		1	2	3
Level 2	1	982	506	955
	2	880		861
	3	995	574	871

		1	2	3
Level 1	1	870	535	860
	2	843		834
	3	784	742	839

Consistent with Ainsworth (2016) on KP

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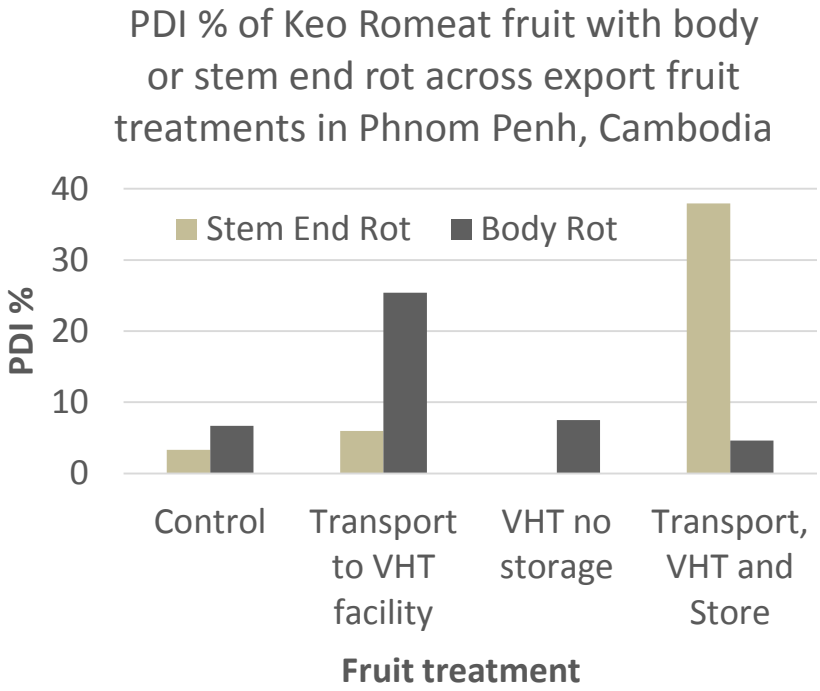
VHT and percentage disease incidence



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National mango breeding program cultivars

- Outstanding performers (for irradiation, colour, yield, flavour)
  - Maybe issues with 1201
  - Harvest date
  - Yield data

NMBP harvest dates and yields Katherine: 2018

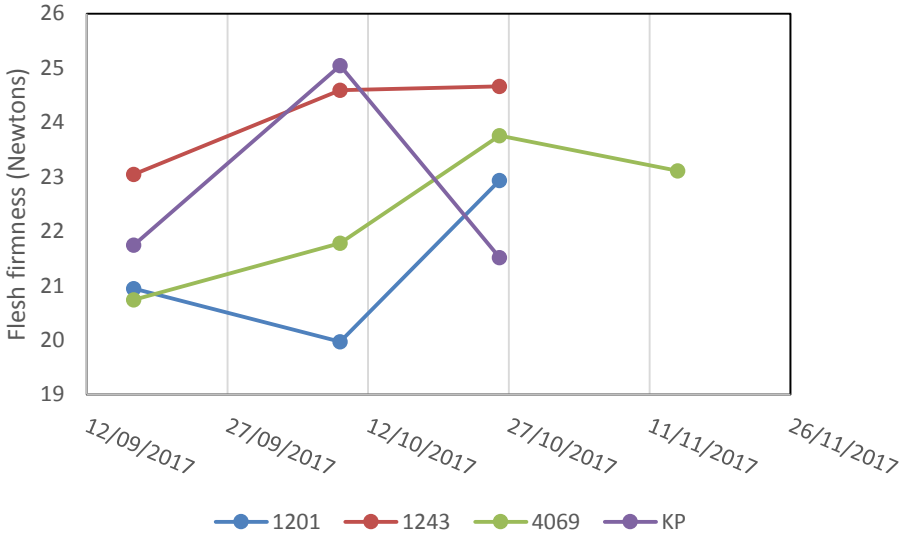
Main effect of scion on mean fruit yield

Harvest Date	Scion (Variety)	N	Yield (kg/tree)	Yield (t/ha)
4th October	**1243**	30	29.5 c	5.3 c
23rd October	**1201**	30	60.5 b	10.8 b
1st November	**Kensington Pride**	30	26.0 c	4.6 c
7th November	**B74**	36	77.3 a	13.8 a
12th November	**4069**	31	73.7 ab	13.2 ab

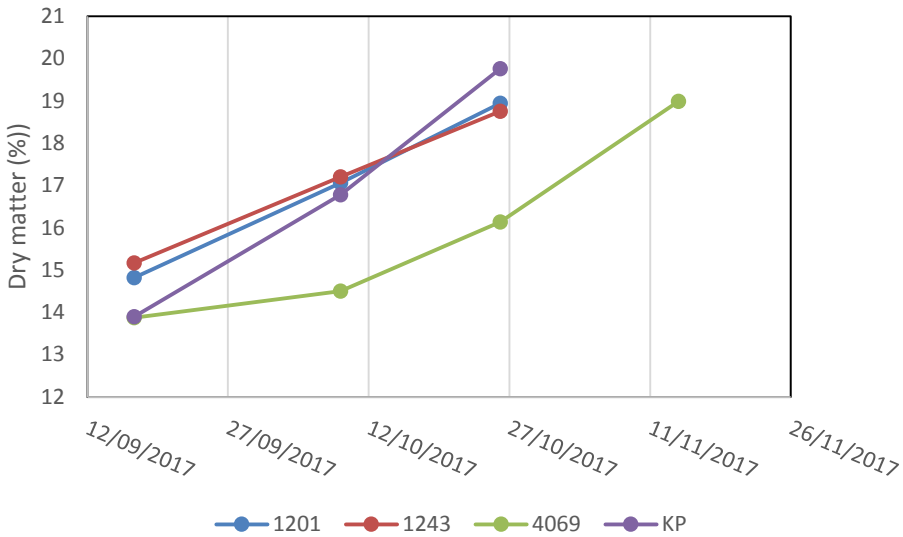
Within a column, means with common letters are not statistically significant by Tukey's $HSD_{0.05}$

Hang time of developing fruit: 2017

On tree flesh firmness (Newton)



On tree dry matter (%)



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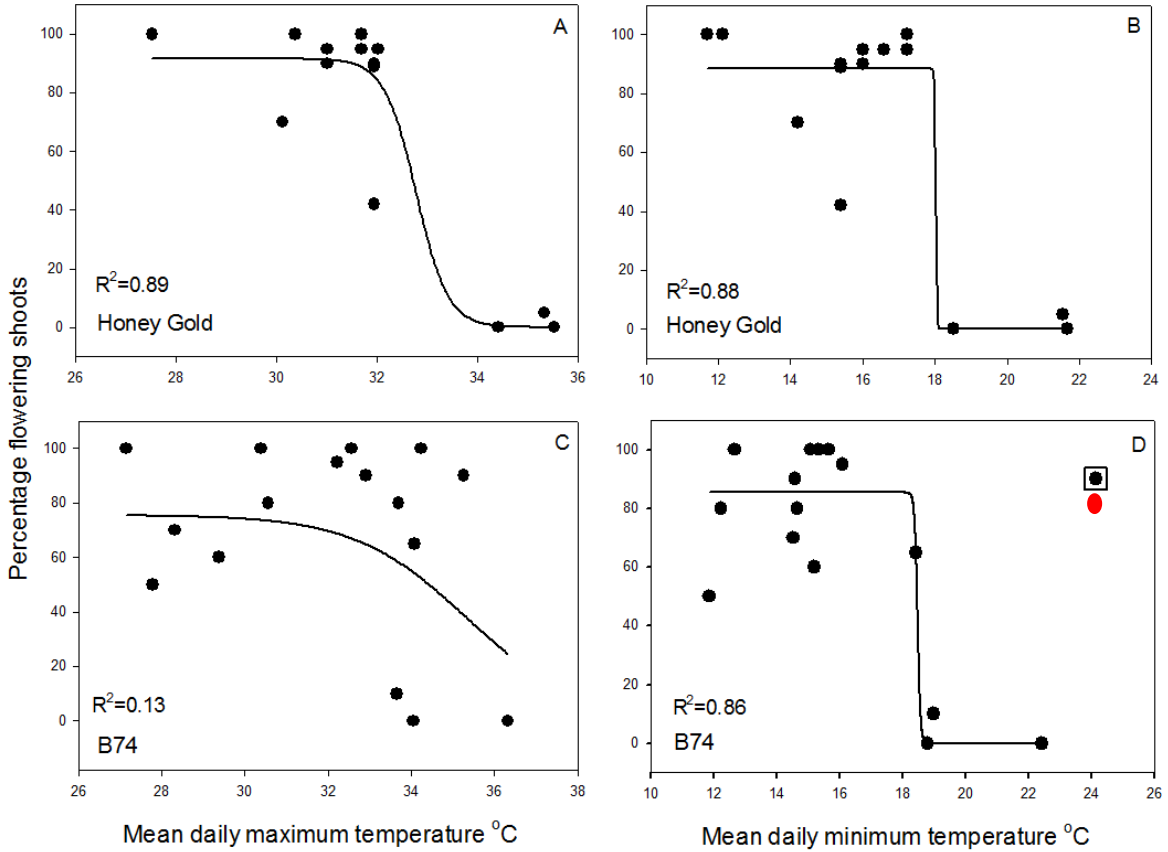
Flower manipulation

- Precise definition of inductive conditions
- ? effects of high PBZ
- Case study with NESP on impacts of Climate Change
- Change of use of registered chemicals



Mango flower induction high minimum and maximum temperature and cultivars have different thresholds

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Summary

- Customer focus
- Integrated specialist team
- Regional, National and International relevance
- Addressing high priority industry problems
- Delivering outcomes that are adopted by research partners
- Building capacity while performing research

Thank you

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