Session Seven
Flowering, fruit set and yield

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Understanding Avocado Fruit
Set in New Zealand – an Overview

Jonathan Dixon, Toni Elmsly, Fiona Fields,
Derek Smith, Henry Pak and Jonathan
Cutting

Avocado Industry Council Ltd

Roger Barber

Freshco Technical Support Service
What is the role of the weather?

Two main factors

• Temperature
• Rainfall
Fruit Set

Temperature (°C)

12/11/2004  7/12-17/12/2004

Average fruit count or number of flowers open per branch
Why not temperature?
Is a lack of water the problem?

Soil moisture available (%) in November
(Source: NIWA)

Year

Far North

BOP

Total crop ('000s tonnes)
Is a lack of water the problem?

Soil moisture available (%) in November (Source: NIWA)

Year

Total crop (‘000s tonnes)

Far North

BOP
Is a lack of water the problem?

“In Florida a wet spring is followed by a good avocado crop and a dry one by a poor crop”

Wilson Popenoe 1920

In the: Manual of Tropical and Subtropical Fruits Excluding the Banana, Coconut, Pineapple, Citrus Fruits, Olive and Fig.

www.avocadosource.com
How important is soil moisture?

Fruit counted in December before first fruit drop

Average fruit number per branch

Soil moisture deficit (kPa)

$r^2 = 0.951$
$p = 0.0047$
$n = 5$
What else is affecting fruit set?

Apart from water stress are there any other factors that can affect fruit set?

Can different crop levels between orchards be explained by differences in nutrition?
Is fruit set affected by nutrition?

Nutrition factors
- Flower boron concentration
- Leaf Nitrogen percentage
Flower Boron levels

Average fruit count per branch vs. Average boron concentration in panicle (ppm dry weight)

Orchard 1 (16/12/2004) vs. Orchard 2 (22/12/2004)
Leaf Nitrogen

Yield (t/ha) vs. Leaf %N (April/May)

- 2003
- 2004
How important is mineral nutrition?

- A general influence on yield
- Not the main driver of yield
Conclusions

- Temperature a minor role
- Soil moisture a major effect
- Mineral nutrition a general effect
- Pollination not a problem
- Problem excessive fruit drop
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