Canopy Management Research in Australia

Horticulture Australia

Queensland Government Department of Primary Industries

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Canopy Management

- Background: reasons for canopy management
- Effect of summer pruning and growth retardant application on shoot growth, flowering and yield
- Objectives of the current canopy management research

Background

- **The avocado tree needs to produce new growth to remain productive**

- **However if left unchecked can result in large trees → orchard crowding**

Large Trees

Problems with:

- **harvesting**
- **effective pest & disease control**
- **other orchard operations**

Orchard Crowding

- reduced light penetration
- large unproductive areas

Canopy Management Objectives

- tree size control
- optimise light interception and penetration
- maintain yield sustainability

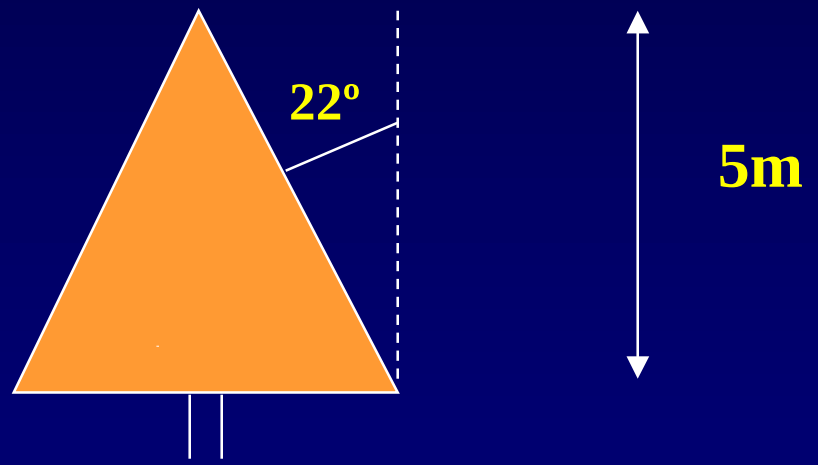
Canopy Management Strategies

- tree thinning
- stag-horning
- selective limb removal
- mechanical pruning ± growth retardants

Mechanical Pruning

Mechanical Pruning

- trees pruned to form a pyramid
- pruning angle of 22º from the vertical
- height 80% of the inter-row spacing (max. 5m)



Growth Retardants (Sunny®)

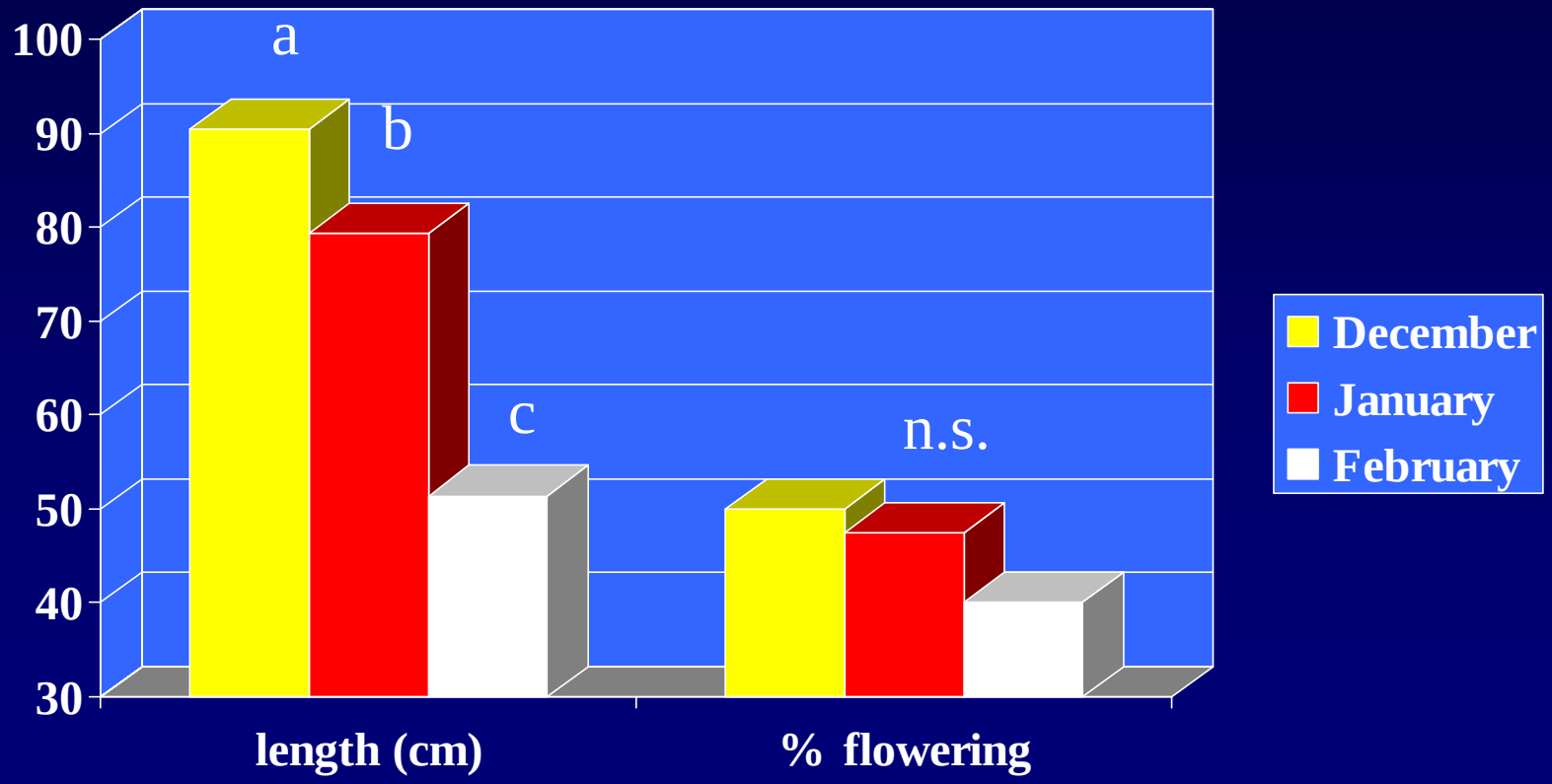
Suppress spring growth & Control regrowth

Summer Pruning & Sunny®

- 3 sites (Childers, Hampton & Goodwood)
- timing of summer pruning
- Sunny® application on regrowth (0, 0.25%, 0.25% x 2, 0.5% and 0.5% x 2)
- effect on regrowth length and flowering
- effect on yield and fruit size

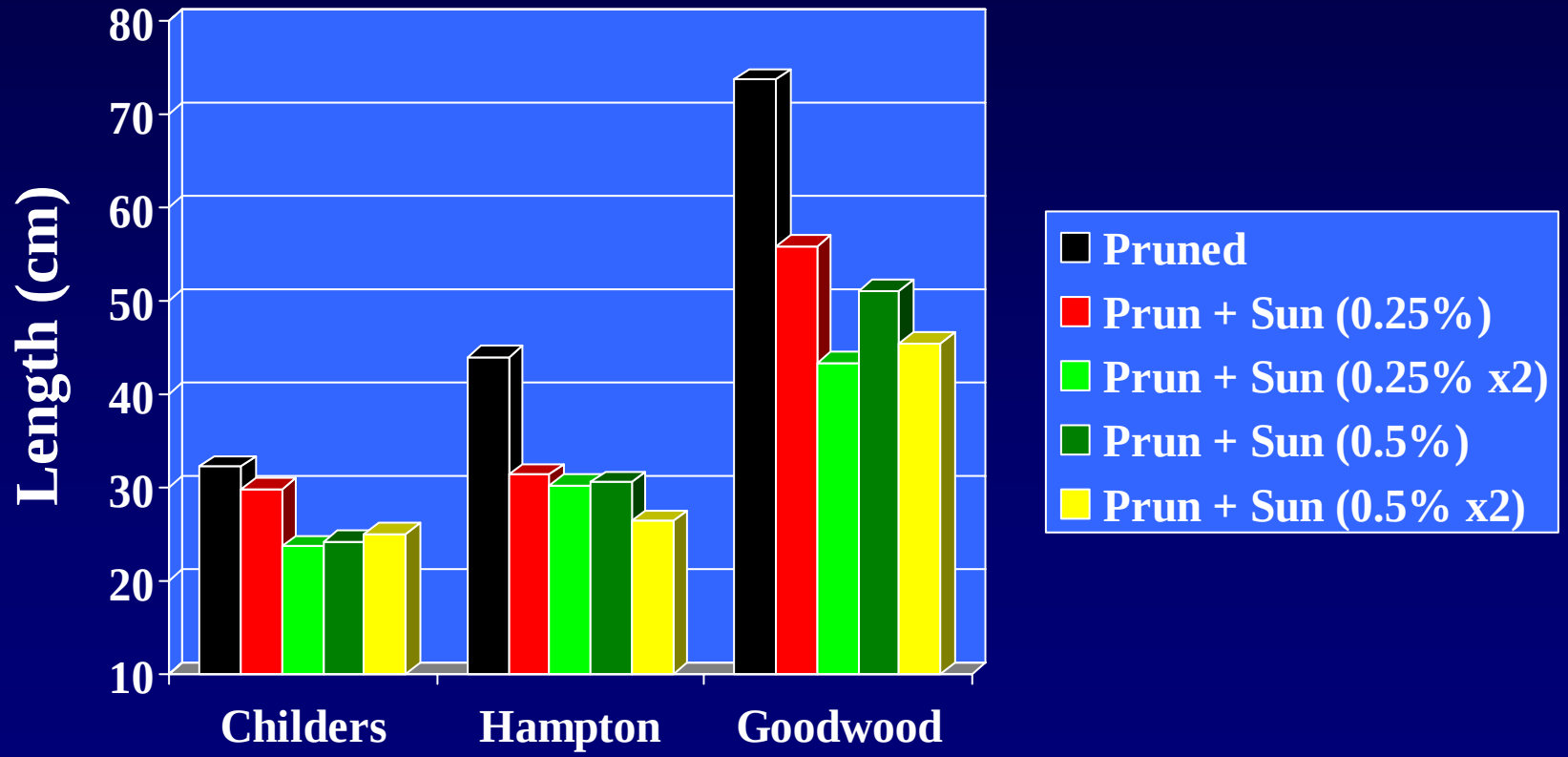
Summer Pruning & Regrowth

(Pruning time)



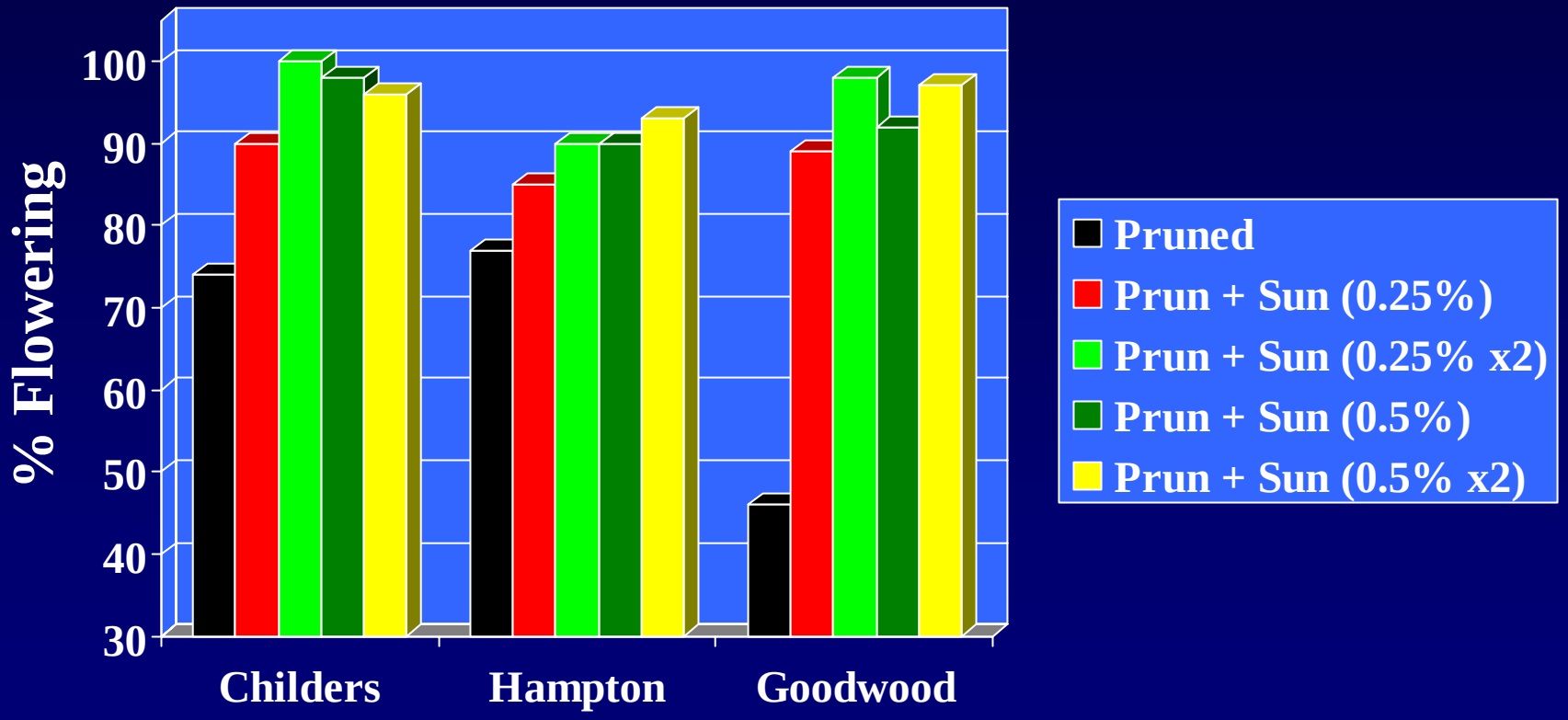
Summer Pruning & Sunny®

(Regrowth length)



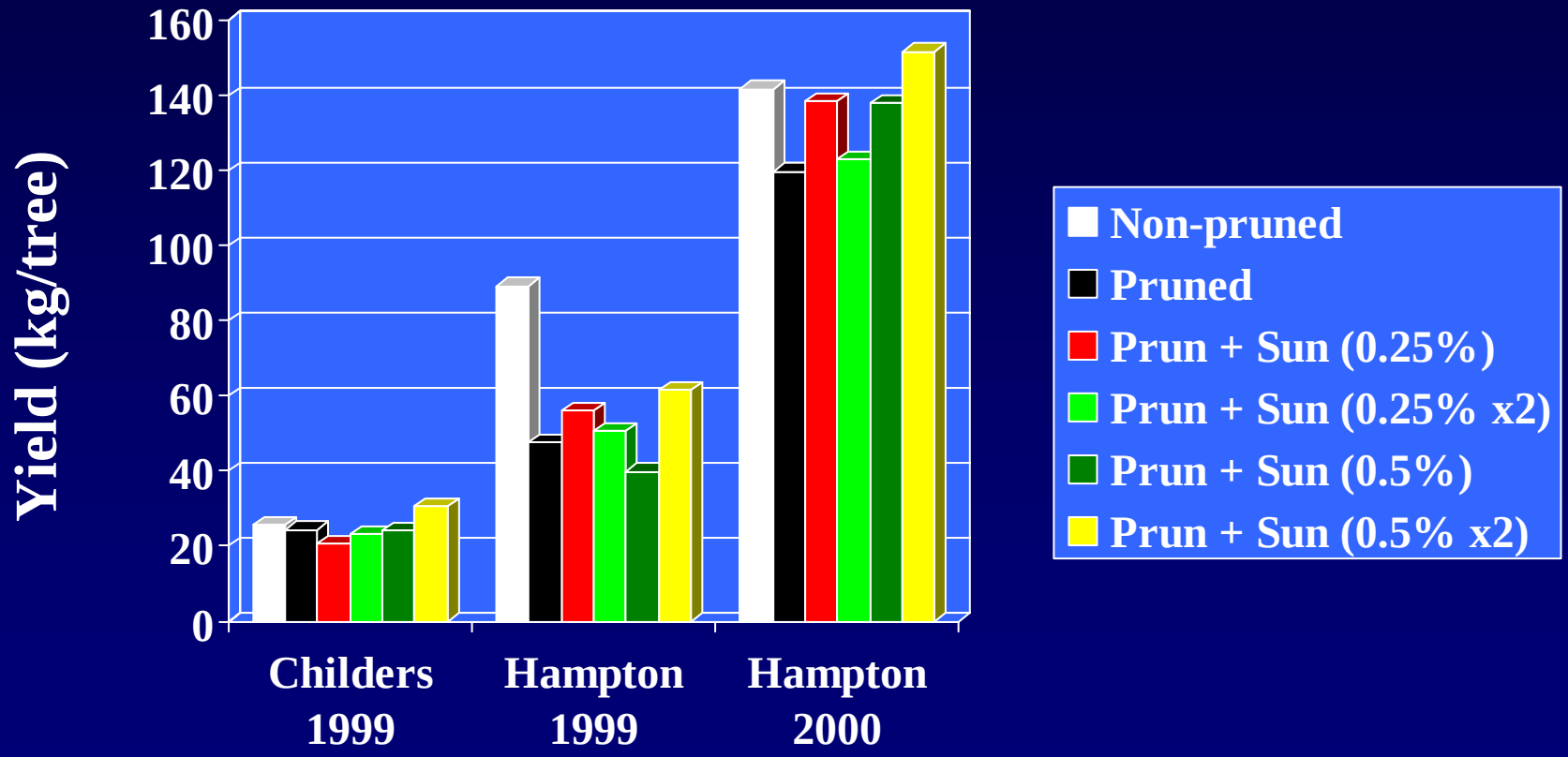
Summer Pruning & Sunny®

(Regrowth flowering)



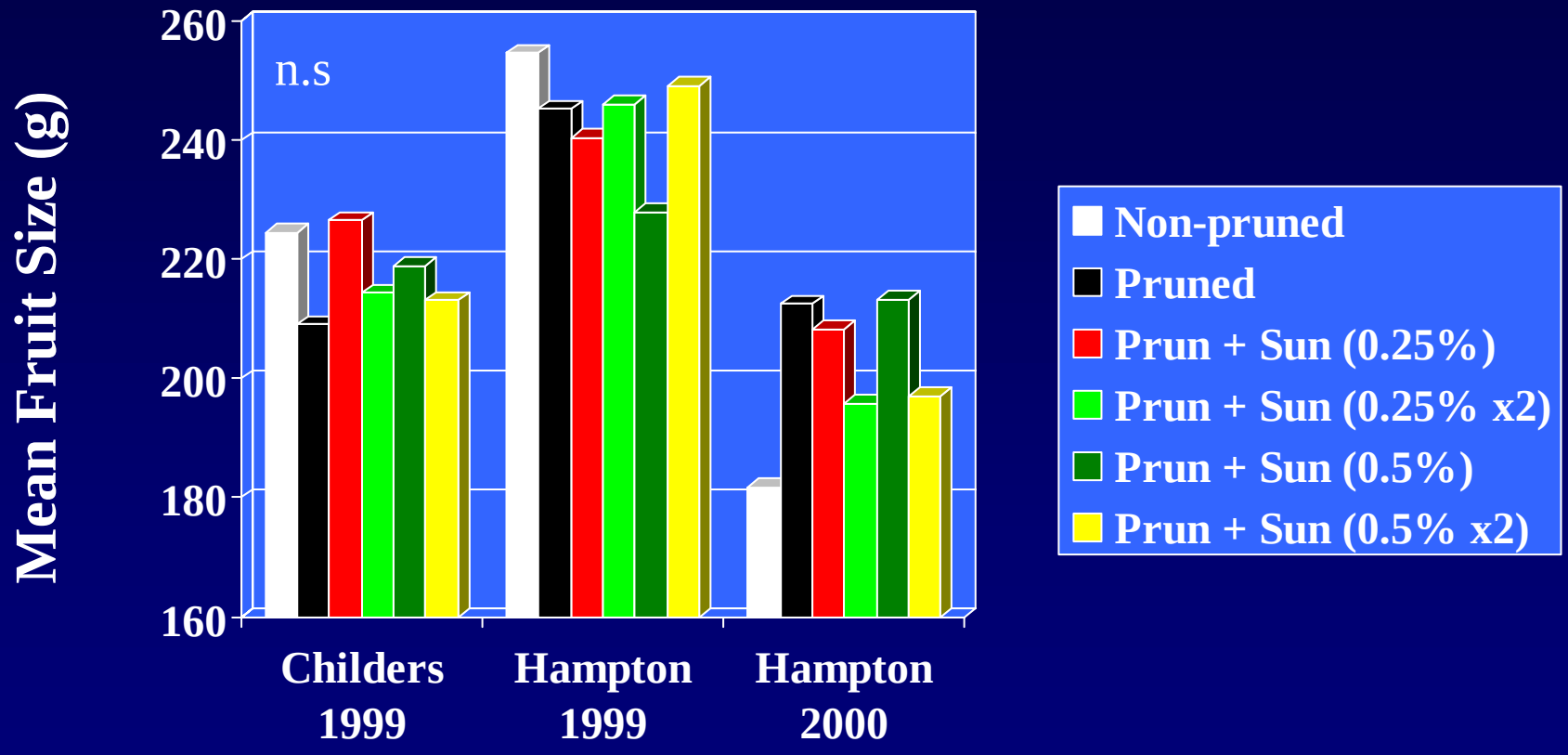
Summer Pruning & Sunny®

(Yield)



Summer Pruning & Sunny®

(Fruit size)



Summary

- pruning stimulates growth and timing influences length of regrowth
- Sunny® can reduce regrowth length and increase regrowth flowering
- summer pruning may reduce fruit size

Current Research

- determine timing of pruning
- identify tree size and shape
- develop strategies to control regrowth
- define minimum light requirement for flowering
- determine impact on fruit size and quality

Pruning Time

2 periods when trees can be pruned

- **after harvest (hard prune)**
- **during summer (light prune)**

Tree Size and Shape

- trees pruned to form a pyramid
- variations in pruning angle
- aim to max. light interception
- height 80% of inter-row spacing (max. 5m)

Regrowth Control

Pruning promotes growth

Ways of controlling regrowth:

- **follow-up pruning**
- **growth retardants (Sunny®)**

Light Management

- effect of pruning on light interception
- identify the minimum light requirement for flowering

Fruit Quality

Effect of pruning strategies on:

- **fruit size**
- **postharvest quality (shelf life, storage disorders and disease)**

The Challenge

Develop a strategy to:

- **control tree size**
- **max. light intercept.**
- **maintain yield & quality**