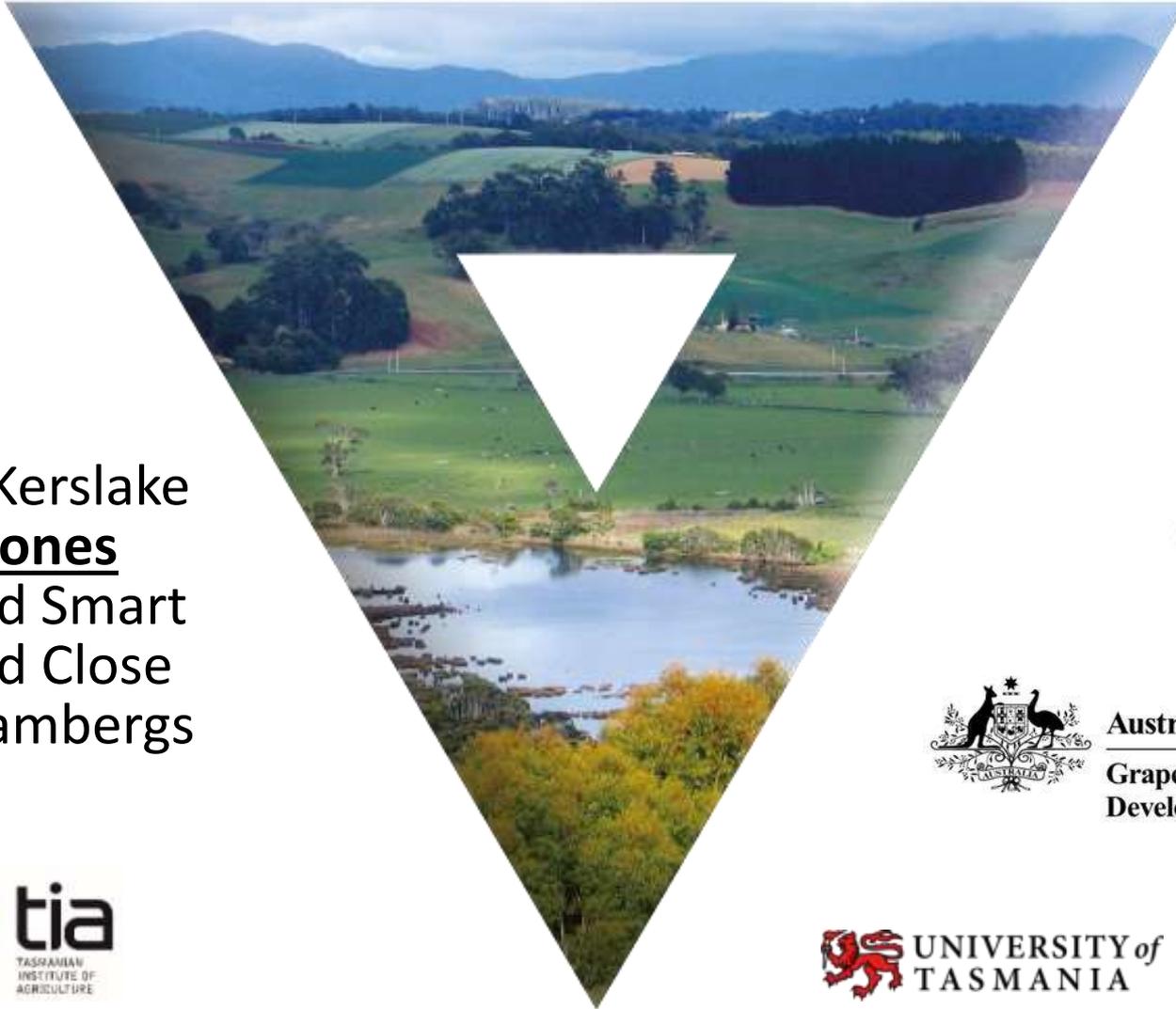


# Linking Pinot Noir canopy condition with wine quality



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**Australian Government**  
**Grape and Wine Research and Development Corporation**



# Pinot noir in Tasmania

- Cane pruned, around 20 nodes
- VSP/Scott Henry
- Little to no shoot thinning
- Bunch thinning
- Target yield 5-15 t/ha (depends on who and for which wine style)
- Fruiting zone leaf removal

# Trial location

- Tamar Valley
  - Mean GDD – 1273
  - Mean rainfall – 648 mm
  - Mean Jan temperature – 17.2 °C
  - Mean Feb temperature – 17.8 °C

# Trial seasonal climate



	2006	2007	2008	10 year mean (1998-2008)
MJT (°C)	17.2	17.5	18.1	17.2
MFT (°C)	17.7	19.3	17.4	17.8
Rain (mm) (Sep-May)	532	317	378	430
Degree Days (Sep-May, base 10°C)	1247	1364	1358	1273

# Trial objectives

- Research question: How should we manage Pinot noir vineyards to produce the best wines that will age well?
- Can we write a ‘method’ or a ‘growing guide’?
  - How many nodes should we prune to?
  - Do we need to bunch thin?
  - Do we need to remove leaves?

# Trial setup

## Tamar Ridge Estates experimental block

- Clone 114, moderate vigour
- Planted 2000 (5 years old for trials) on own roots
- 2963 vines/ha
- Scott Henry trellis, drip irrigated
- Small scale winemaking
  - 10 kg ferments
  - Standard protocol

# Trial winemaking



# Trial measurements

- Vineyard
  - Yield and yield components, pruning weight
- Fruit
  - Sugar, pH and TA, anthocyanins and phenolics
- Wine
  - Somers colour and phenolics measures
- Seasonal climate
  - GDD, rainfall, mean Jan and mean Feb T°

# Trial analyses

- Principal component analysis (PCA)
- Data reduction method
  - Takes multiple variables and recalculates new values and plots them against each other
  - Shows relationships between samples and variables

# Pruning trial

- Commercial standard for this vineyard and block
  - 30 nodes per vine (higher than Tas av.)
- Trial
  - 10, 20, 30 or 40 nodes per vine

# Pruning level

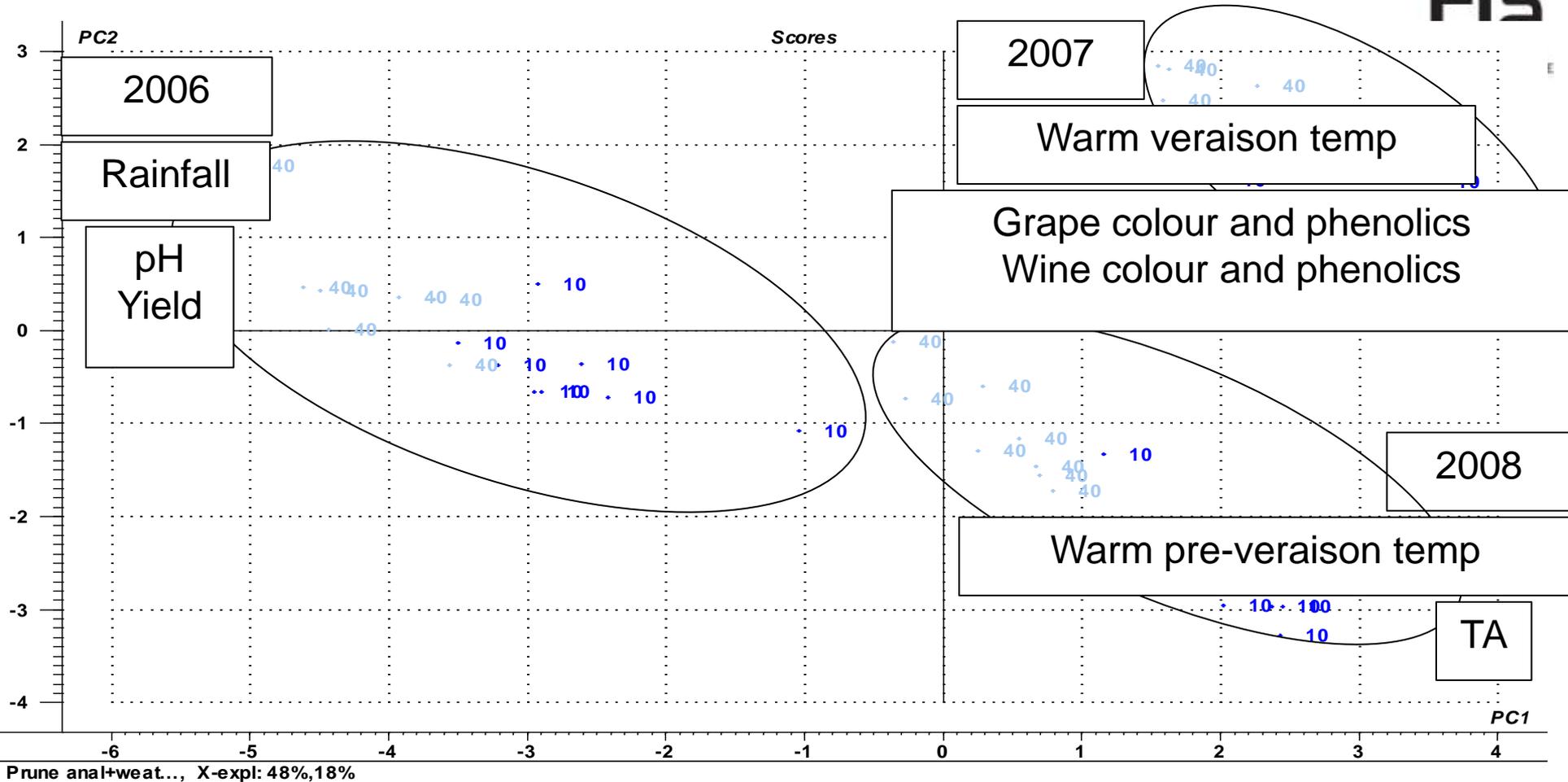
- Increasing node number
  - Increased yield
    - 4 t/ha (10 nodes 2008) to 25.5 t/ha (40 nodes 2006)
  - Increased Y:P
  - Only increased bunch weight in 2008

# Pruning level

- Increasing node number
  - TSS
    - Highest for 30 nodes per vine in 2007
    - No effect any other season
  - TA
    - Decreased (significant 2007 and 2008)
- pH, total grape anthocyanins and phenolics
  - No effect

# Pruning level

- Young wine composition (2007 and 2008)
  - Only significant effects in 2008
  - Increasing node number
    - Reduced colour
    - Reduced stable pigment



# Bunch thinning

- Why do we reduce yield for Pinot noir?
- When is the best time to bunch thin?
  
- Trial
  - Removed 25 % of bunches
  - At fruit set, pea sized berries, 10 % veraison or 90 % veraison

# Bunch thinning

- Bunch thinning
  - Reduced yield
  - No effect Y:P
  - Reduced bunch weight in 2006

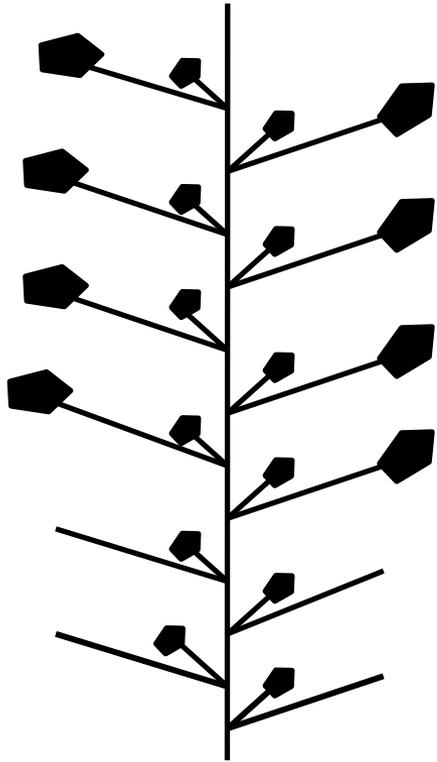
# Bunch thinning

- TSS
  - No effect
- TA
  - Only in 2008
  - End of veraison thinning lowest
- pH
  - Inconsistent response
- Grape total phenolics and anthocyanins
  - No response

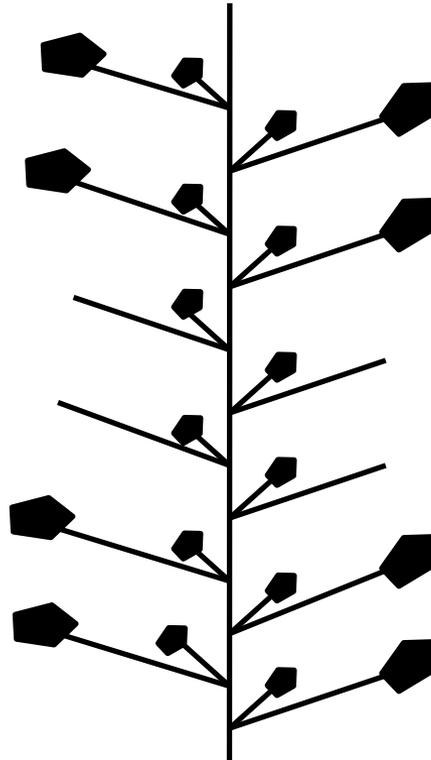
# Bunch thinning

- Young wines
  - No significant effects
  - Nothing
  - Zip
- Why do we bunch thin then?
- It costs money to drop money on the ground
  - Reducing 13 to 7.5 t/ha in 2006
  - Reducing 15.5 to 10 t/ha in 2007
  - Reducing 11 to 8 t/ha in 2008

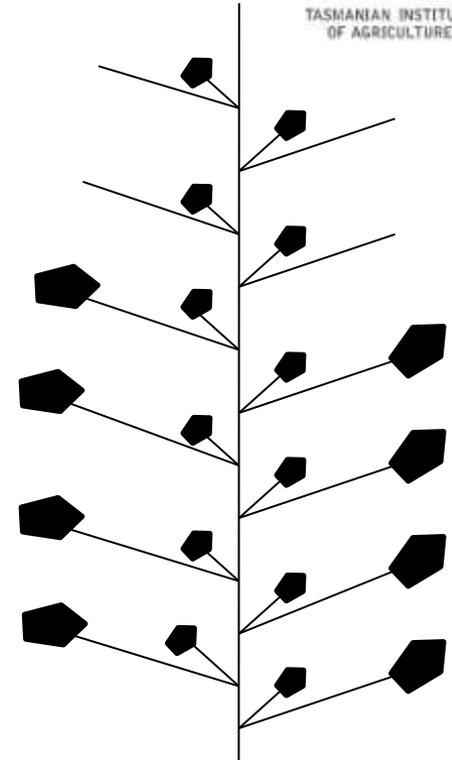
# Leaf removal 2007 and 2008



Basal



Middle



Apical

At 10 % veraison

# Leaf removal

- No yield effects
- TSS
  - Apical LR reduced
- TA
  - Reduced with middle or basal LR
- pH, grape total anthocyanins and phenolics
  - No effect

# Leaf removal

- No young wine effects in 2007
- 2008
  - No differences between basal LR and control
  - Apical LR
    - Reduced colour
    - Increased anthocyanins
    - Increased phenolics
    - Decreased stable pigment
    - Key contribution of the apical leaves

# Summary

- Pruning level
  - Some effect on young wines
  - But no effect 12 month old wines
- Bunch thinning (25 %)
  - No effect on young wines
  - No effect 12 month old wines
- Basal leaf removal
  - No effect young wines
  - No effect 12 month old wines

# Summary

- Seasonal climate differences more important than the management practices
  - Warmer seasons = can sustain higher crop loads (winter pruning)
  - Cooler seasons = bunch thinning and basal leaf removal can improve fruit and wine composition
- Yield and quality relationship needs to be managed within each season, cannot be prescriptive year to year

# Acknowledgements

- Funding and support
  - Tamar Ridge Estates
  - Australian Grape and Wine Research and Development Corporation
  - Tasmanian Institute of Agriculture
- Dr Bob Damberg (PCA)
- Drs Richard Smart, Jo Jones and Dugald Close



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