VISUALIZING BUD DISSECTION FOR EARLY YIELD PREDICTION

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INTRODUCTION

- Yield prediction is conventionally achieved by bunch counting with 20% variance compared with real yield (Dunn 2010). Minimizing variance can benefit the industry.
- Grape bunch develops from inflorescence primordia (IP) in the bud. Variance in bunch number per vine is the major cause of annual yield variation.
- Bud dissection can be used to:
  - assess the number of IP
  - determine incidence and severity of primary bud necrosis (PBN), an disorder reduces the bud fruitfulness.
  - guide pruning.

OBJECTIVES

1. Investigate the relationship between IP area and bunch weight.
2. Investigate the influence of PBN on yield.
3. Evaluating bud dissection visualization as part of a new yield prediction method.

METHODS

1. 30 samples were collected at 3 different growing stages from 6 blocks in Adelaide, SA and 4 blocks in Coonawarra, SA.

2. Sample analysis method:

3. Procedures for IP area measurement:

RESULTS

1a: Primary shoot
1b: Secondary shoot
2a: IP area along a four-node cane

CONCLUSIONS

1. Inflorescence primordia (IP) and inflorescence area have positive correlations with the bunch weight at harvest.
2. PBN reduces IP area in primary bud and lowers the bunch weight at harvest in both primary and secondary shoot.
3. Visualizing bud dissection can hopefully be developed as a new approach for early stage yield prediction for wine industry.

Acknowledgement:
Visualizing bud dissection project (the project) was supported by Australia’s grapegrowers through their investment body Wine Australia and the University of Adelaide. Wynns Coonawarra Estate kindly provided 4 blocks for sample collection.

Reference:

Image J, developed by the National Institutes of Health, USA (https://imagej.nih.gov/ij/).