



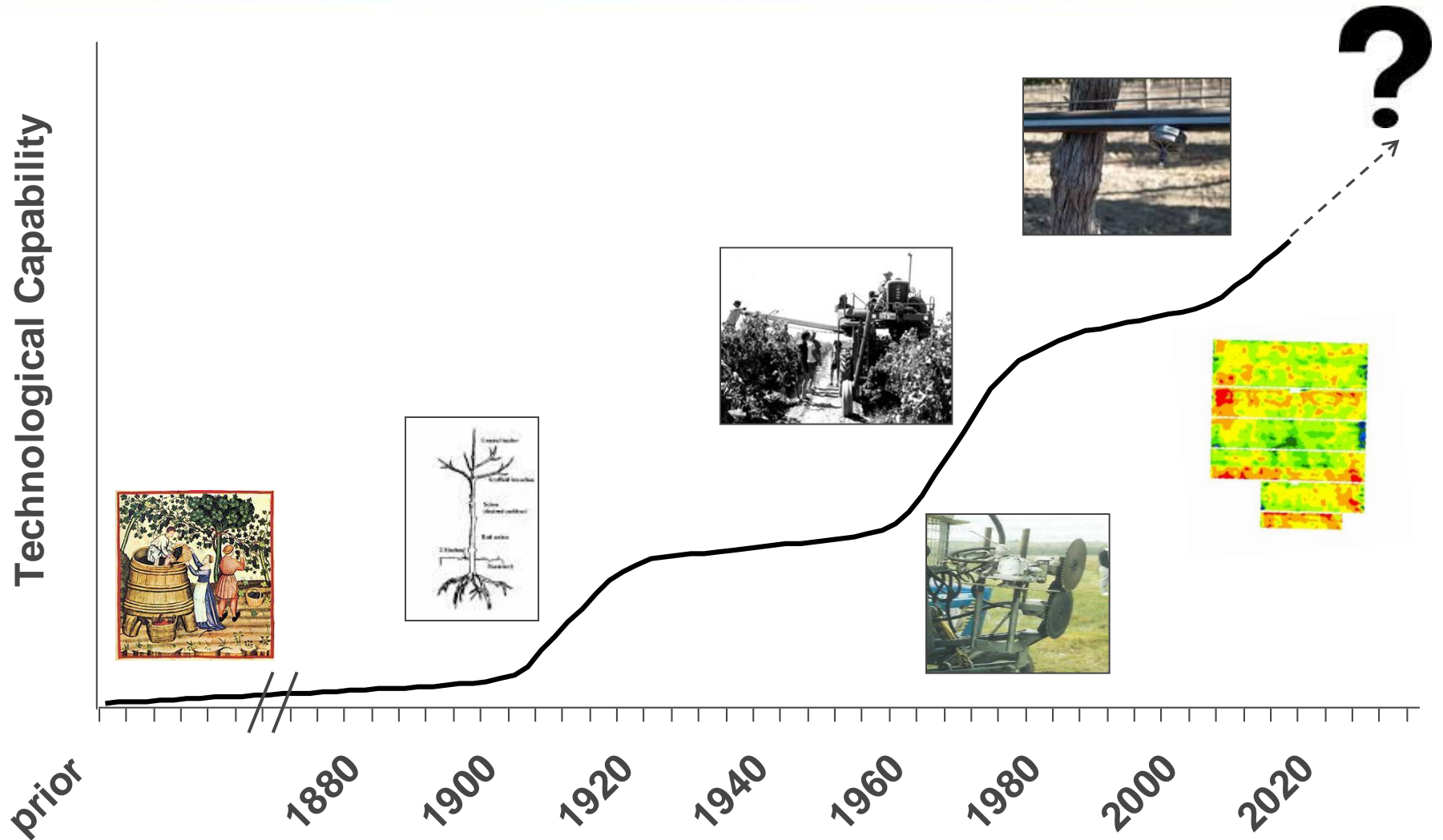
Vineyards of the Future

Exciting Developments on the Horizon

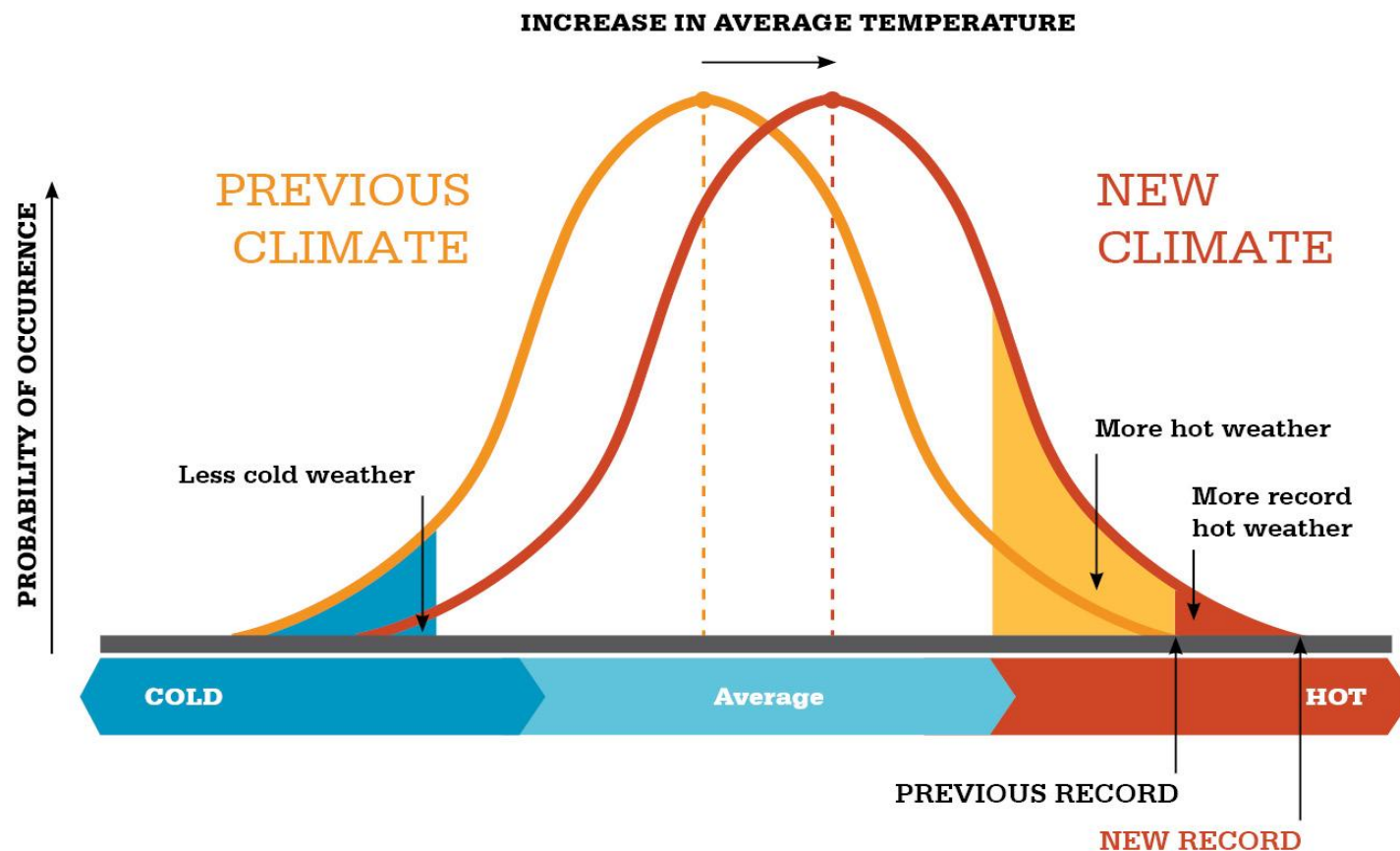
BRETT McCLEN

BEECHWORTH VIGNERONS WORKSHOP – JUNE 2014

EVOLUTION OF TECHNOLOGY IN AUSTRALIAN VITICULTURE



FUTURE CHALLENGES

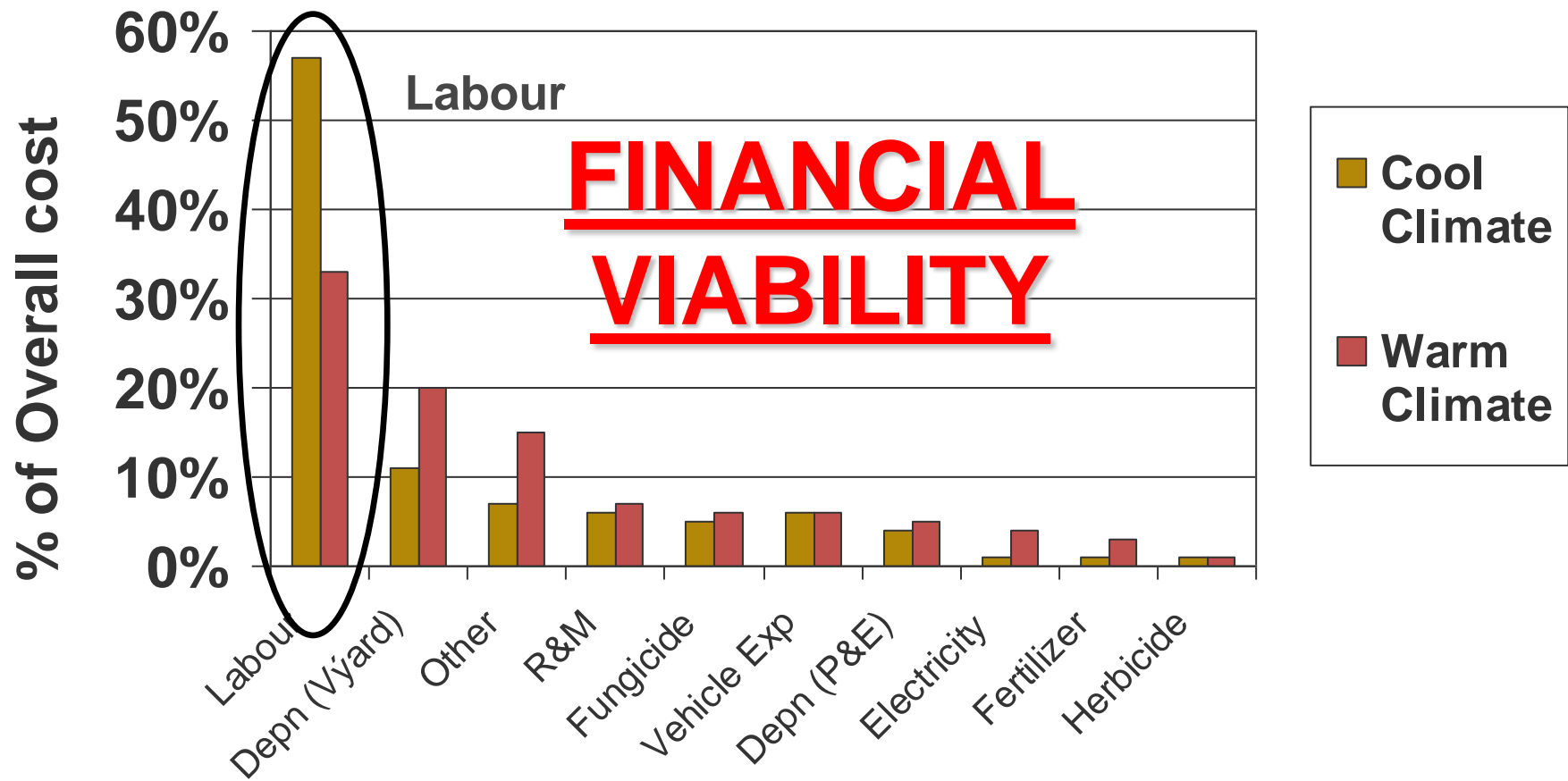


Source: Modified from IPCC, 2007

FUTURE CHALLENGES



- Production Costs



AGENDA



1. INNOVATIVE EQUIPMENT
2. VARIETAL DIVERSITY
3. IMAGINE IF?



When the tractor stops, the arms cut the canes







DRIVERLESS TRACTORS



DRIVERLESS TRACTORS



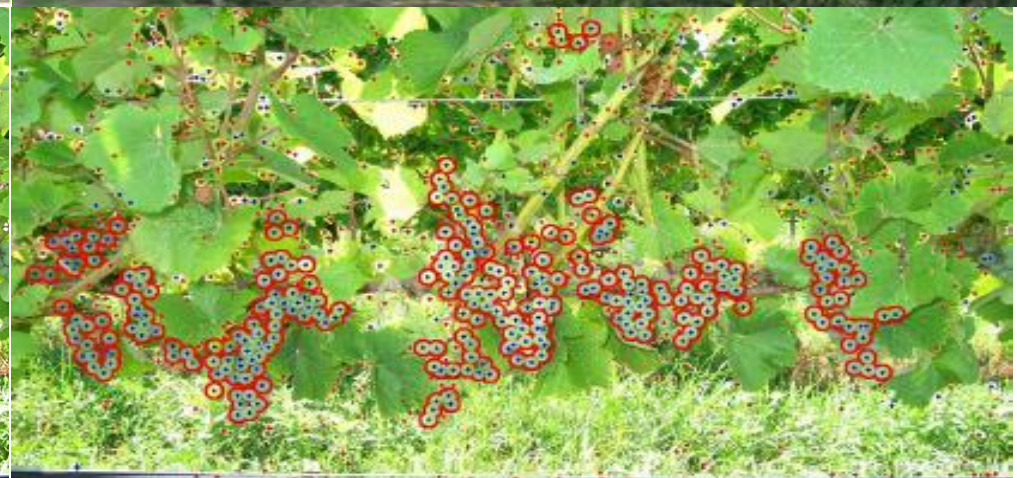
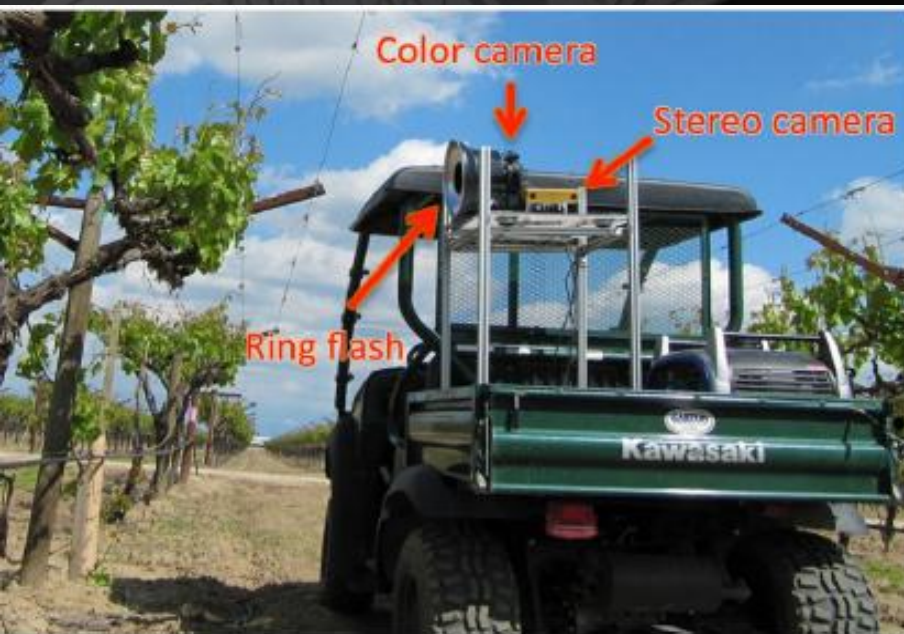


Easy. Integrated. Intelligent. Easy. Integrated. Intelligent. Easy. Integrated. Intelligent. Easy. Integrated. Intelligent.



JOHN DEERE

AUTOMATED YIELD ESTIMATION



Nuske et. al. (2011).

2. VARIETAL DIVERSITY



COMMODITY WINES



Breeding for:

- Disease Resistance
- Heat Tolerance
- Water Use Efficiency
- Quality Attributes –
Aroma, Colour, Mouthfeel
- Yield



FINE WINES



Further Clonal diversity

- Quality enhancement
- Flavour and tannin maturity at lower sugar



3. IMAGINE IF?



- **Automated Disease Detection?**

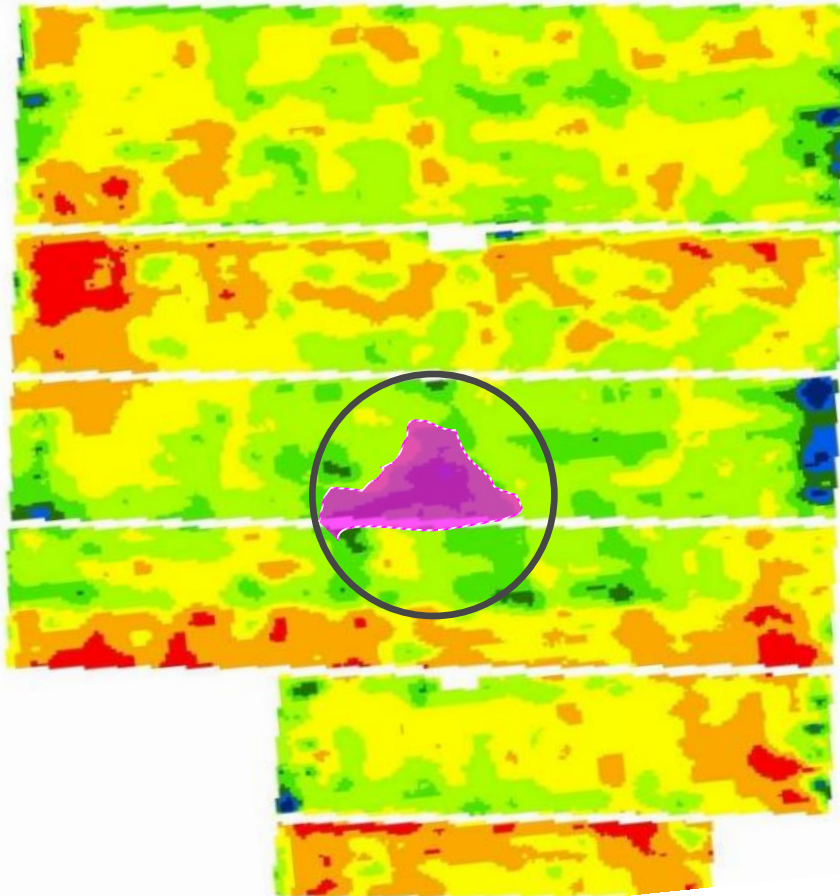
- Nano-sized particles used to indicate presence of fungal pathogens



- Mixed in a spray tank
- Tractor mounted sensors could indicate presence of disease
- Nano-technology – “New Industrial Revolution”. US Gov’t funding FY14 - \$1.7B*

* US National Nanotechnology Initiative (www.nano.gov)

3. IMAGINE IF?



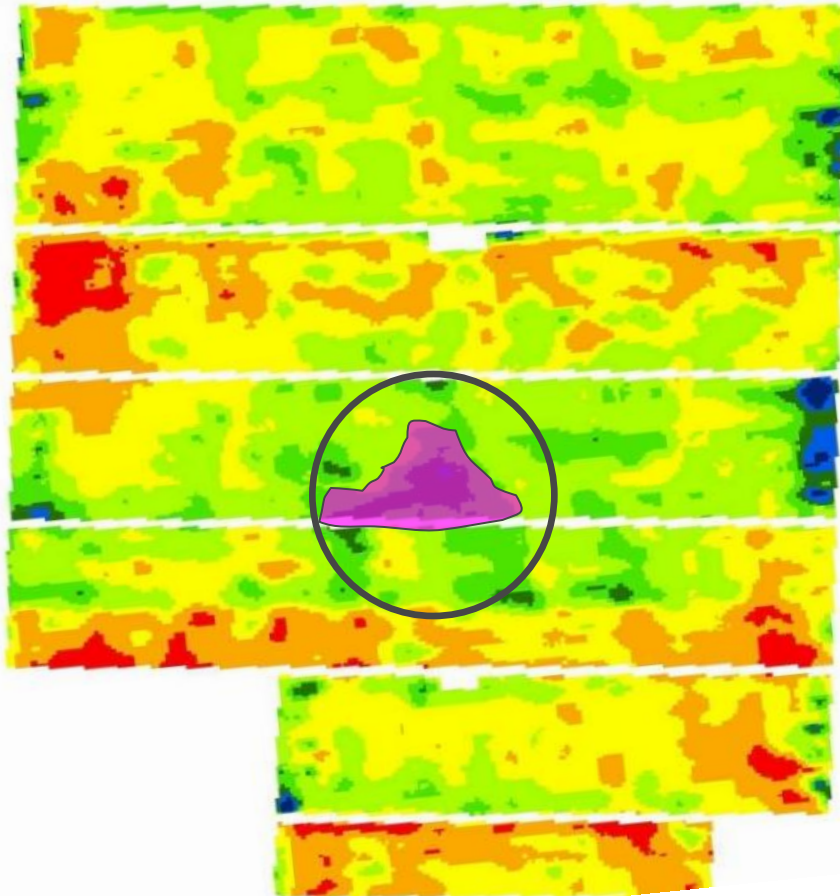
3. IMAGINE IF?



Next Generation of Fungicides?

- Spray nano-particles to kill fungal infections
- Have been shown to kill *B. Cinerea* (Park *et. al.* 2006)
- Disease control without inorganic chemicals?

3. IMAGINE IF?



3. IMAGINE IF?



- “**Smart Dust**”. Network of Nano-devices spread throughout the vineyard
- Provide data in a spatial format
- Temp, Humidity, pH, Baume, colour
- Big extension of precision viticulture



SUMMARY



- Vineyards need to be financially viable to survive
- Labour is still our biggest cost. Need to mechanise where we can
- Potential for new varieties
- Technology will continue to evolve
- The future is EXCITING!!



Acknowledgements



- Ashley Keegan - FABAL
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