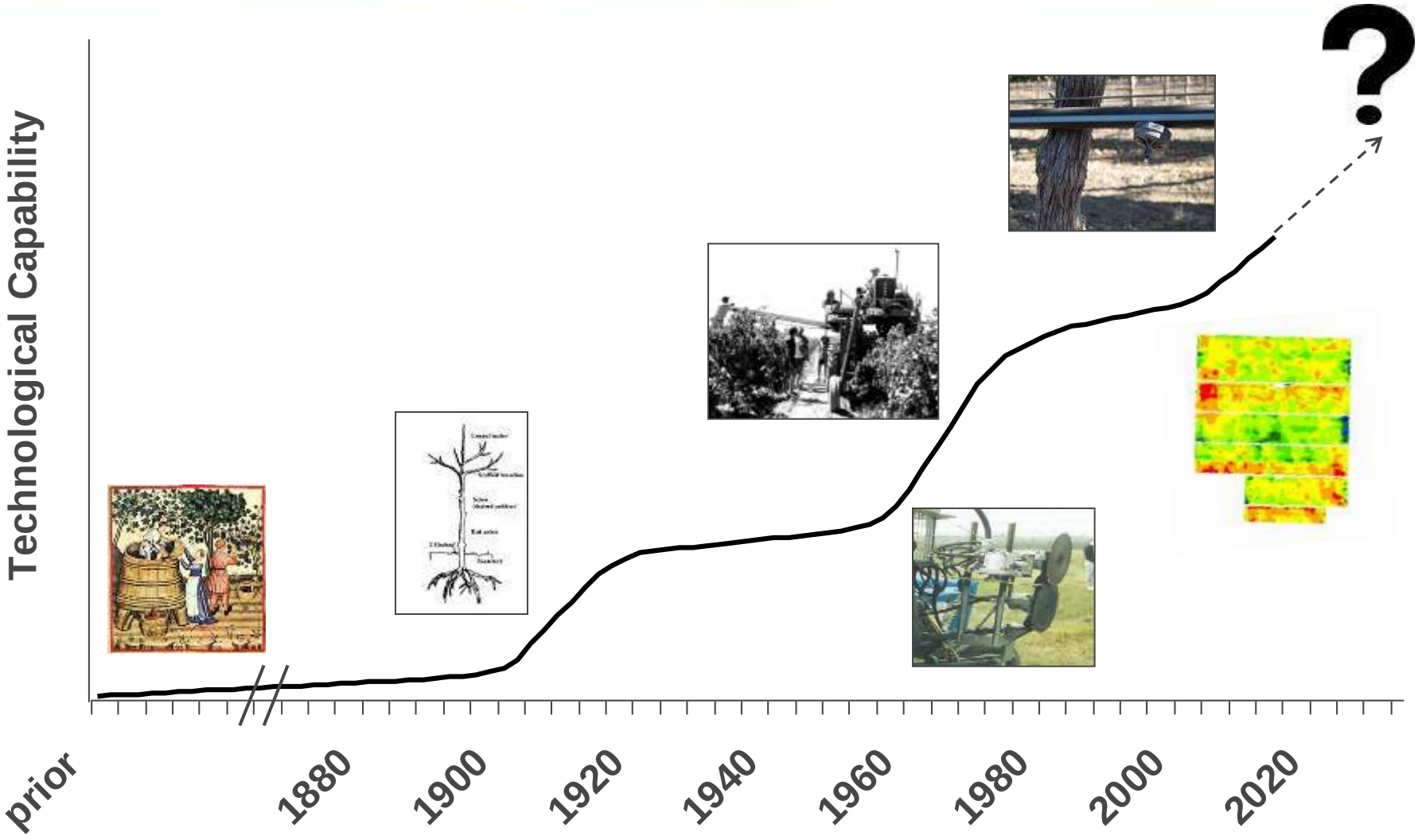
Vineyard Management Tools for the Future

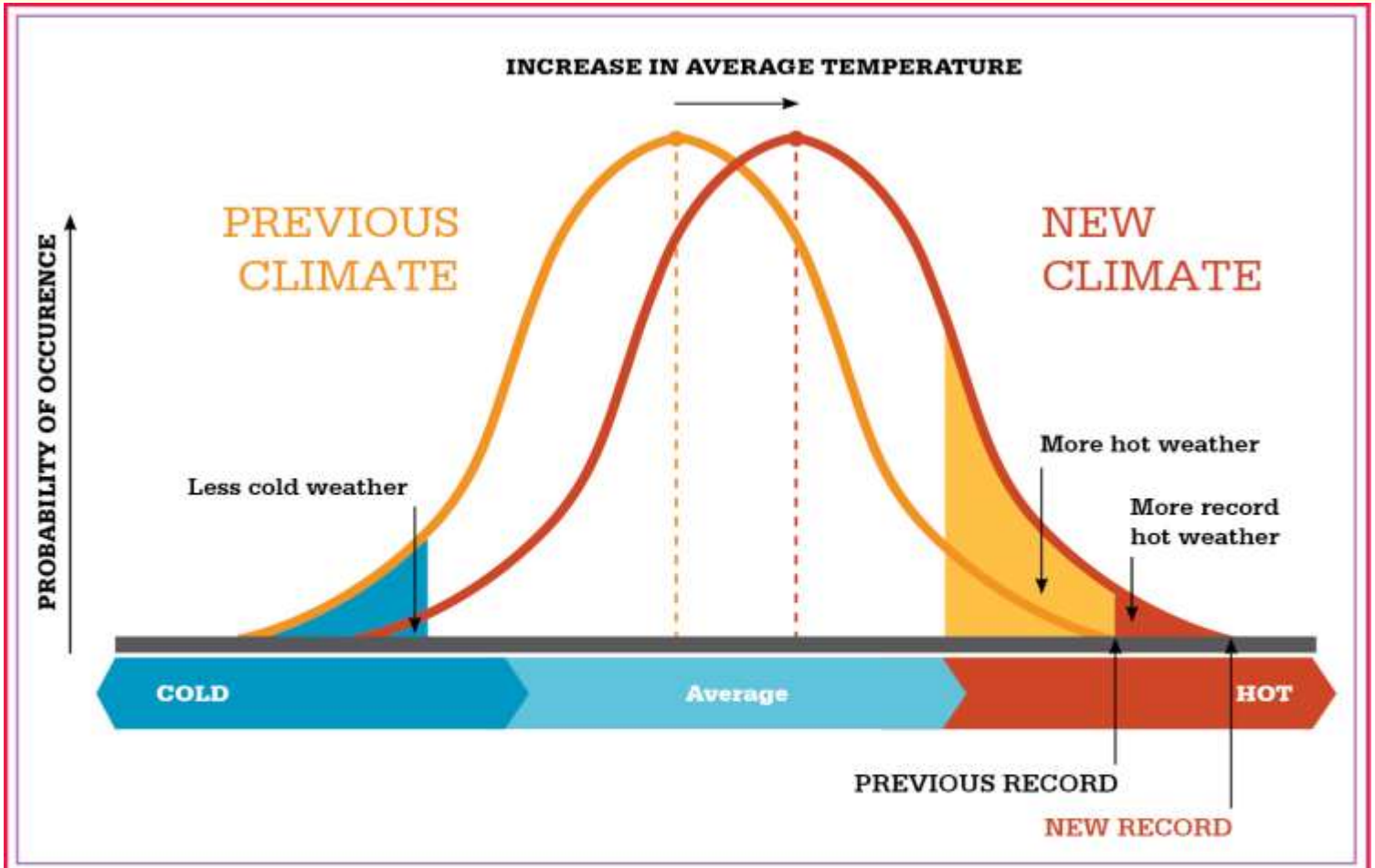
Brett McClen

EMERGING TECHNOLOGIES WORKSHOP
McLAREN VALE – MAY 2014

EVOLUTION OF TECHNOLOGY IN AUSTRALIAN VITICULTURE



FUTURE CHALLENGES

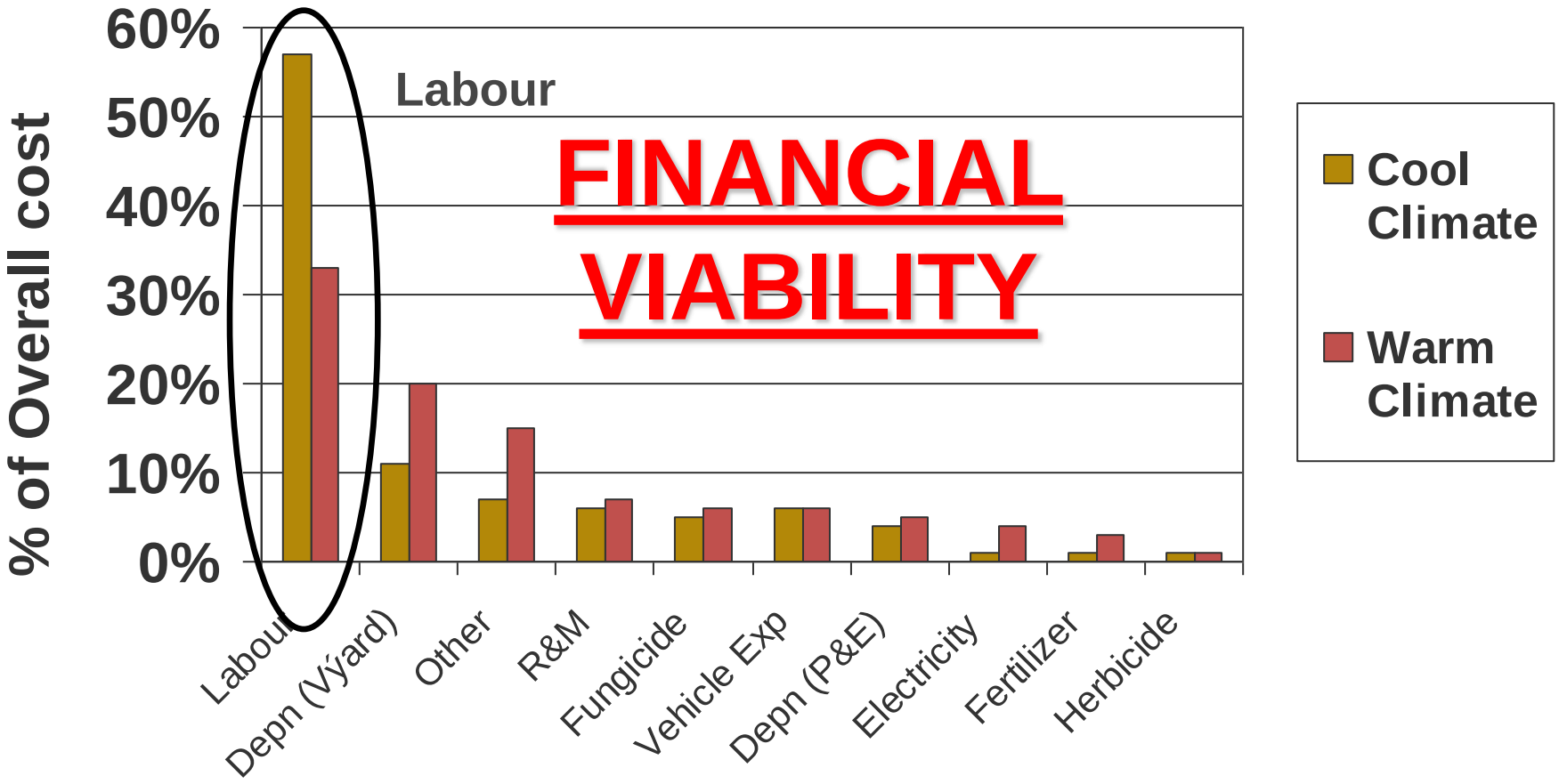


Source: Modified from IPCC, 2007

www.climatecommission.gov.au

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

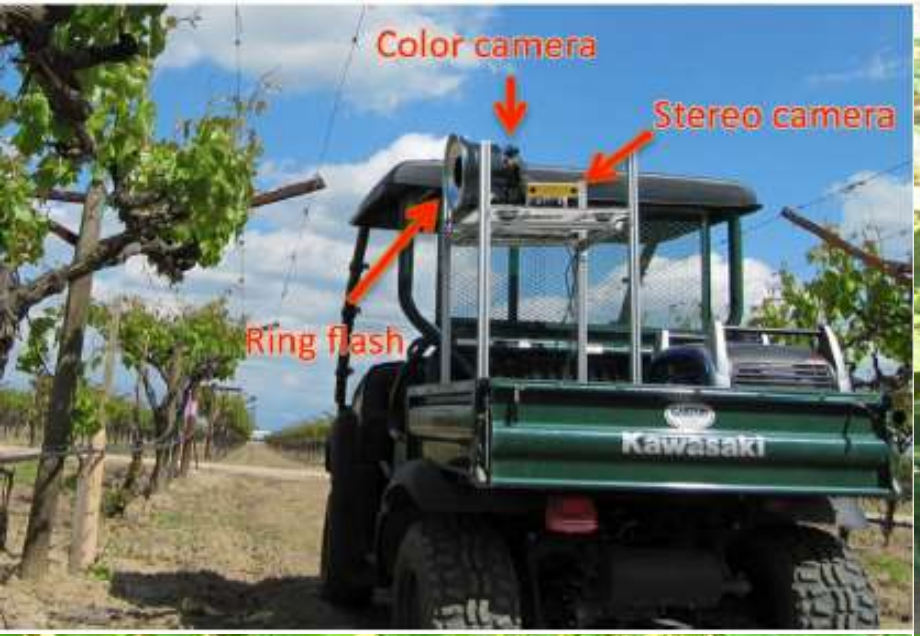


DRIVERLESS TRACTORS




Easy. Integrated. Intelligent. Easy.
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



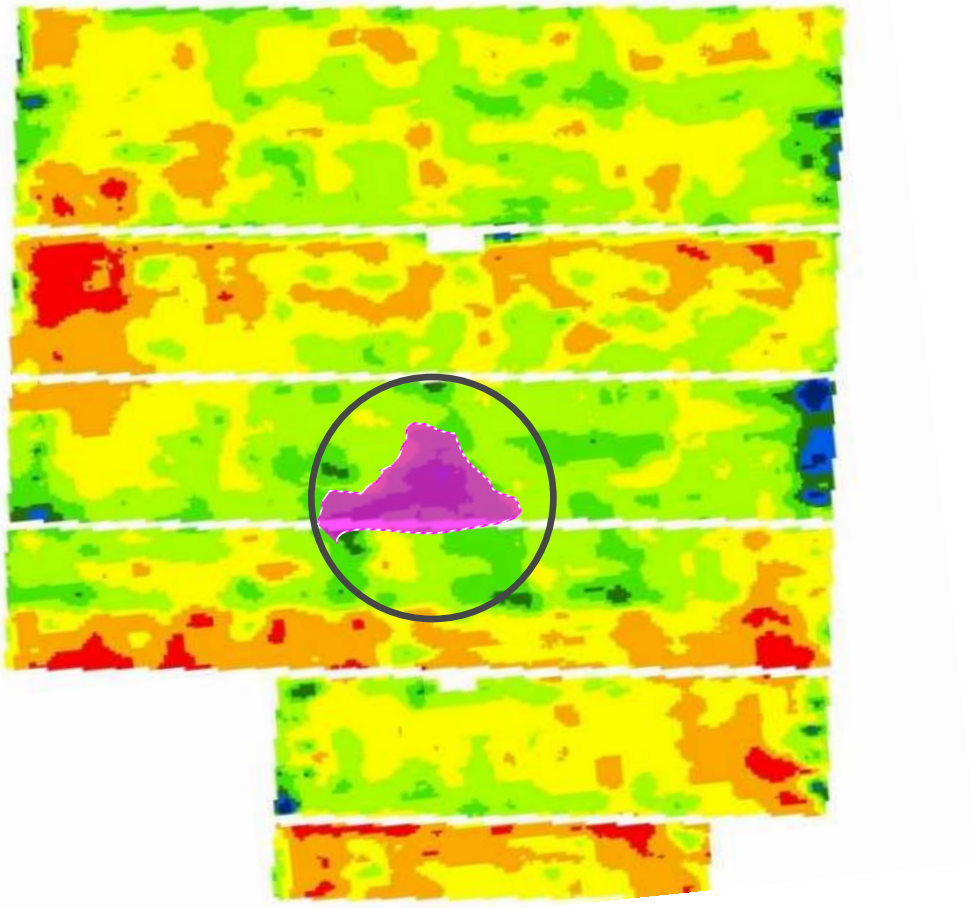
3. IMAGINE IF?

- **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?

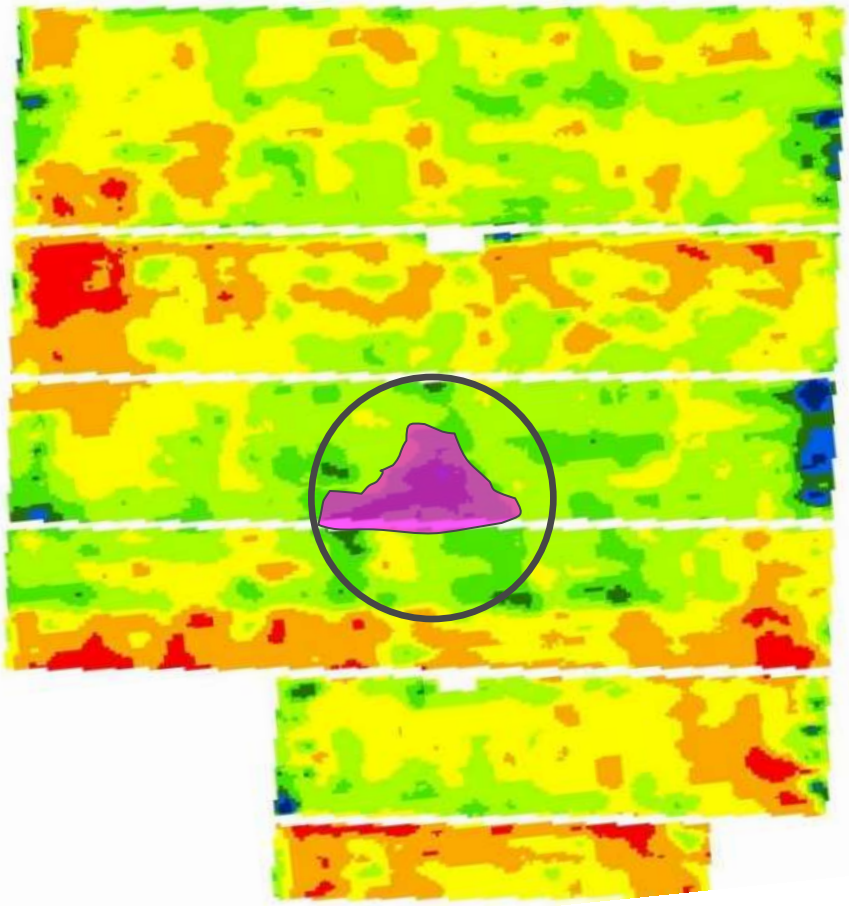


3. IMAGINE IF?

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!!



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- Ashley Keegan - FABAL
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