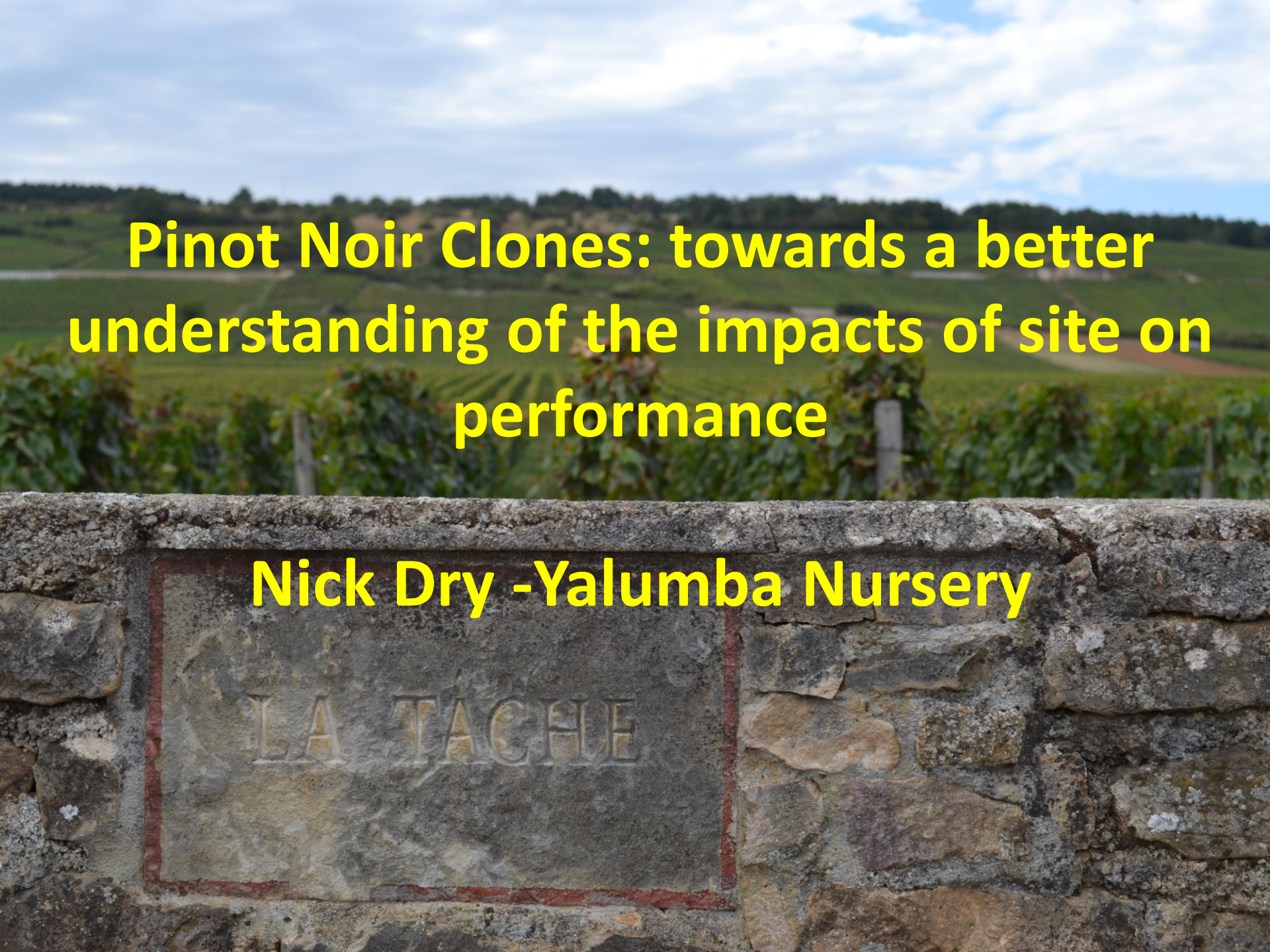
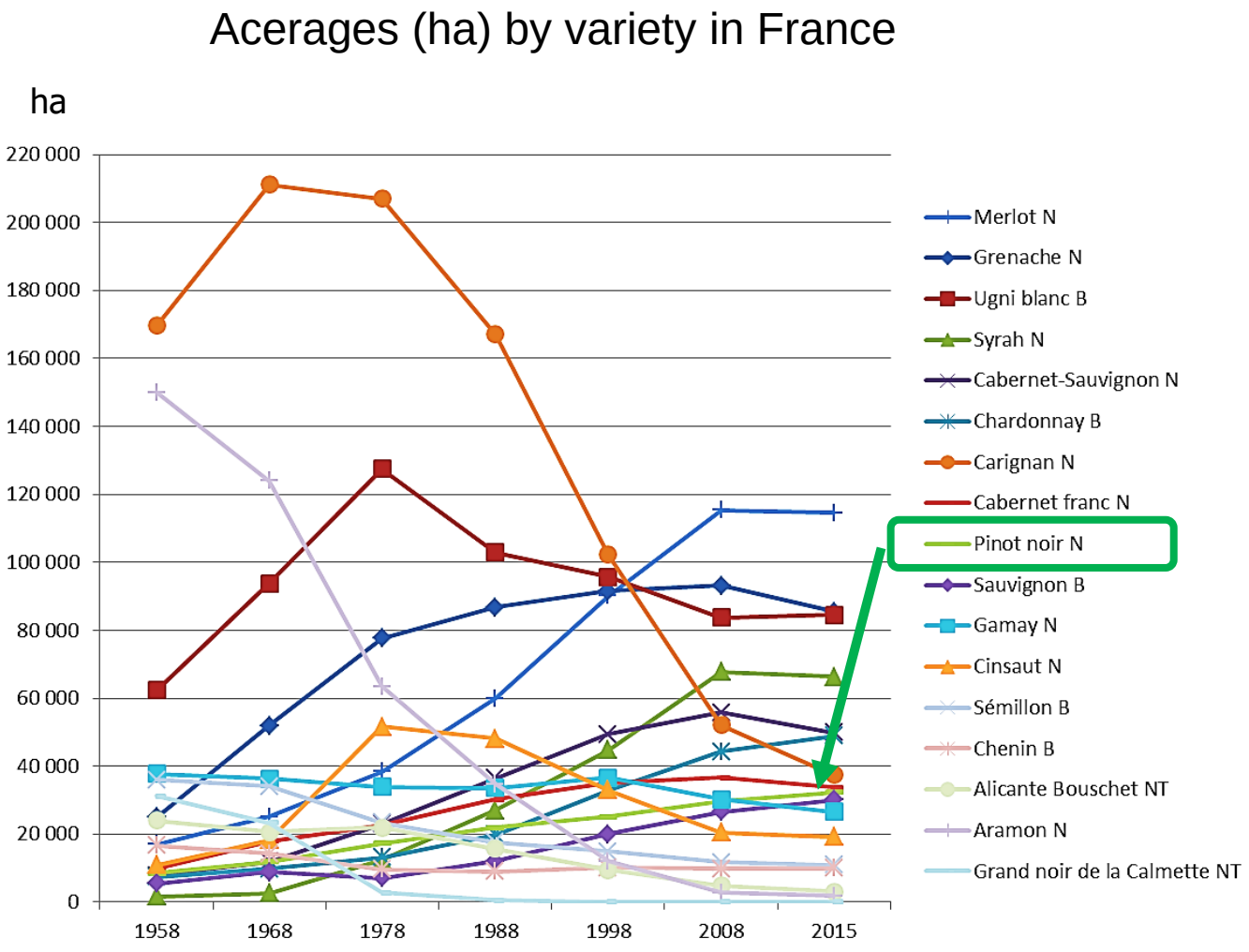



# Pinot Noir Clones: towards a better understanding of the impacts of site on performance

Nick Dry -Yalumba Nursery

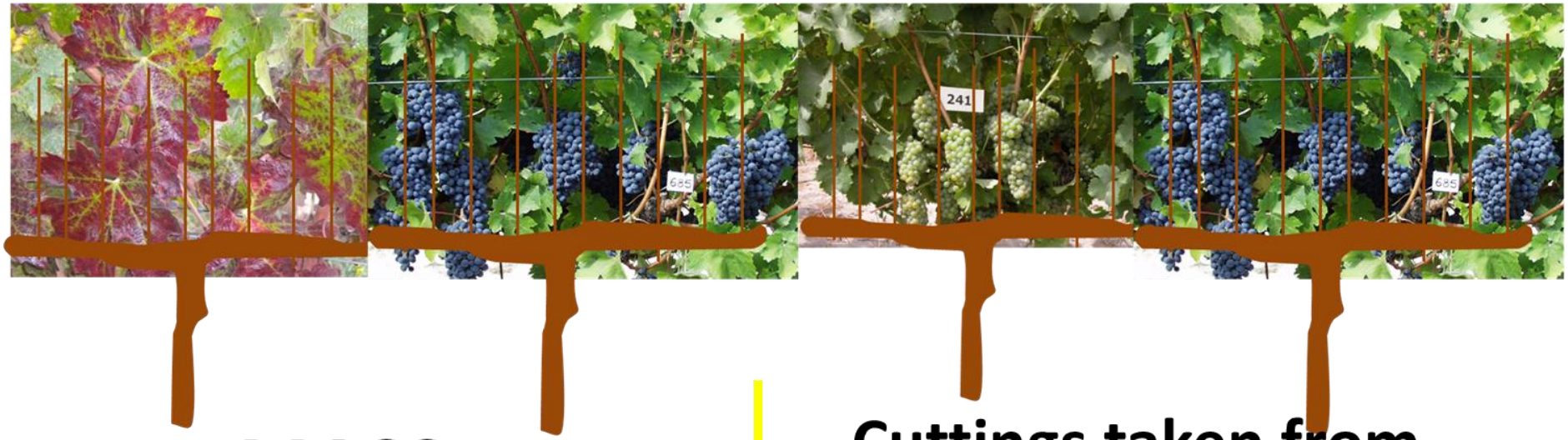
# French context : Evolution of top varieties (JMB, 2012)




Source JM Boursiquot

# Presentation Outline

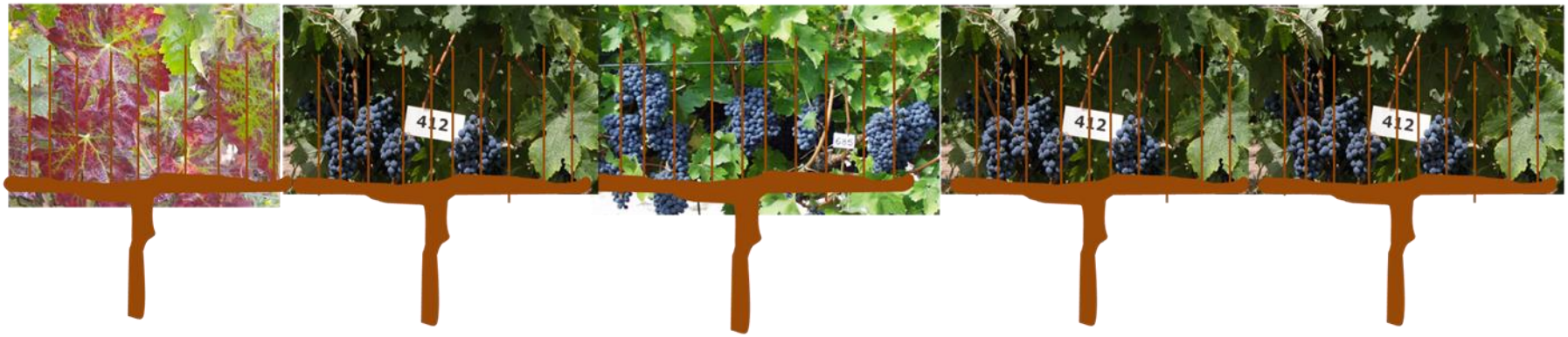
- What clones are in Australia?
- Current Trends: Australia, France and U.S.
- Discussion of clone performance based on survey results
- The future of pinot noir clone selection (France and Australia??)



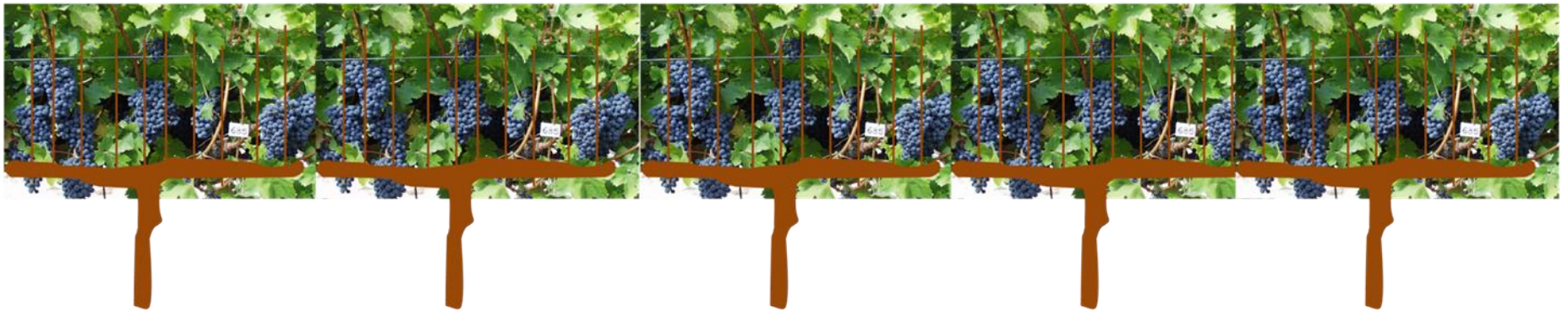

# MASS SELECTION

**Cuttings taken from across the vineyard**

# What is a clone?




A population derived from a single mother vine, with attributes the same as the mother (Robinson, 2012).



# Why do we use clones?

- Build complexity
- Better  viticultural performance for a site
- Better match for end-product objectives
- Spread harvest load
- Point of difference

➔ More options for winemakers and viticulturists.

# Timeline of Clone Imports into Australia

**1962**- D5V12A (2051)

**1968**- GM198

**1969-** 20 GM, G5V15, Mariafeld, D2V5 (8104)

**1970**- 542 and 543

**1971**- MV6, G8V3, G8V7, D2V6, H7V15 (2325)

**1988**- 114B and 115B

**1989**- 777B

**???**-Abel

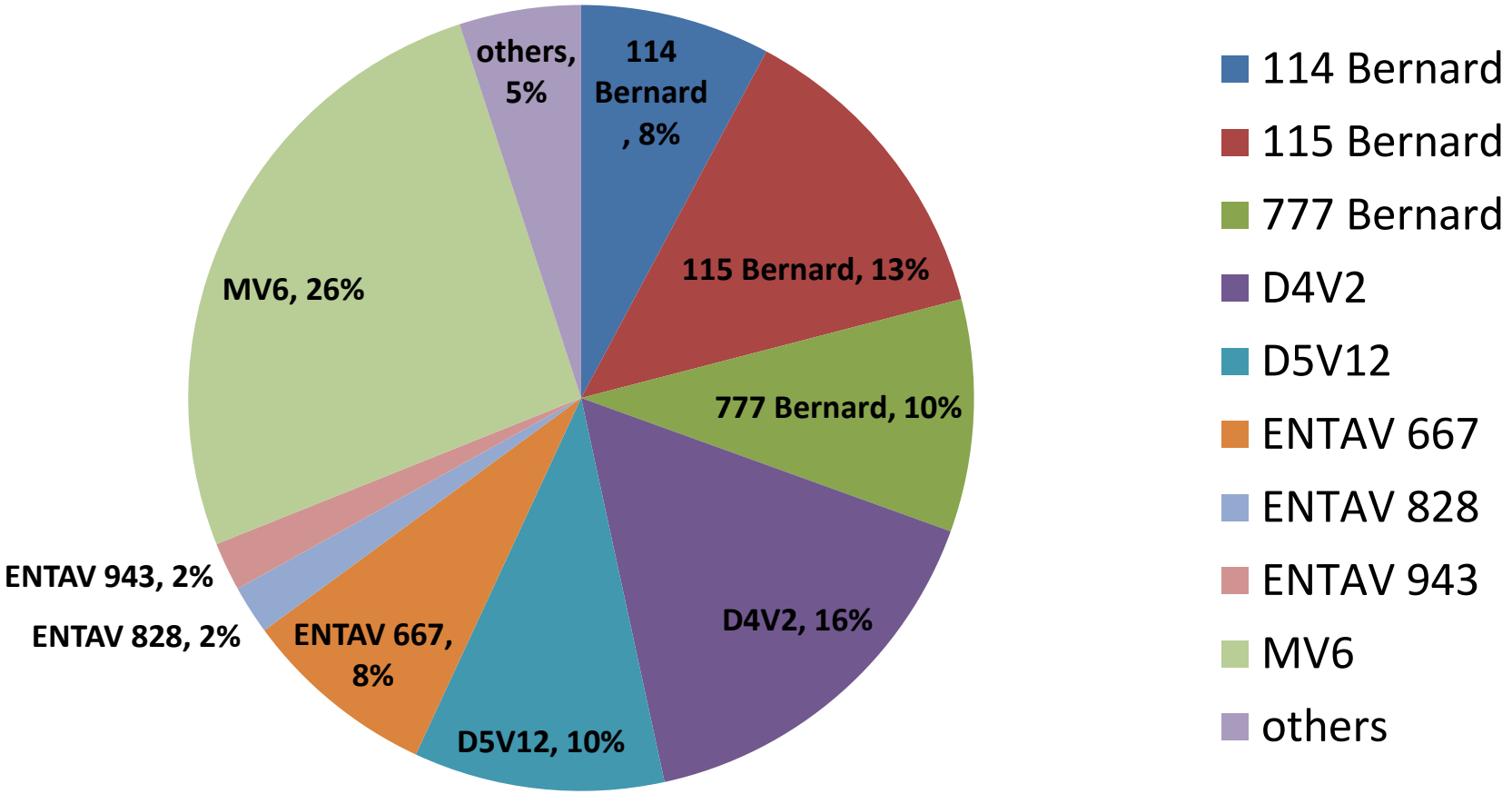
**2008**-ENTAV-INRA® 667

**2009**-ENTAV-INRA® 583

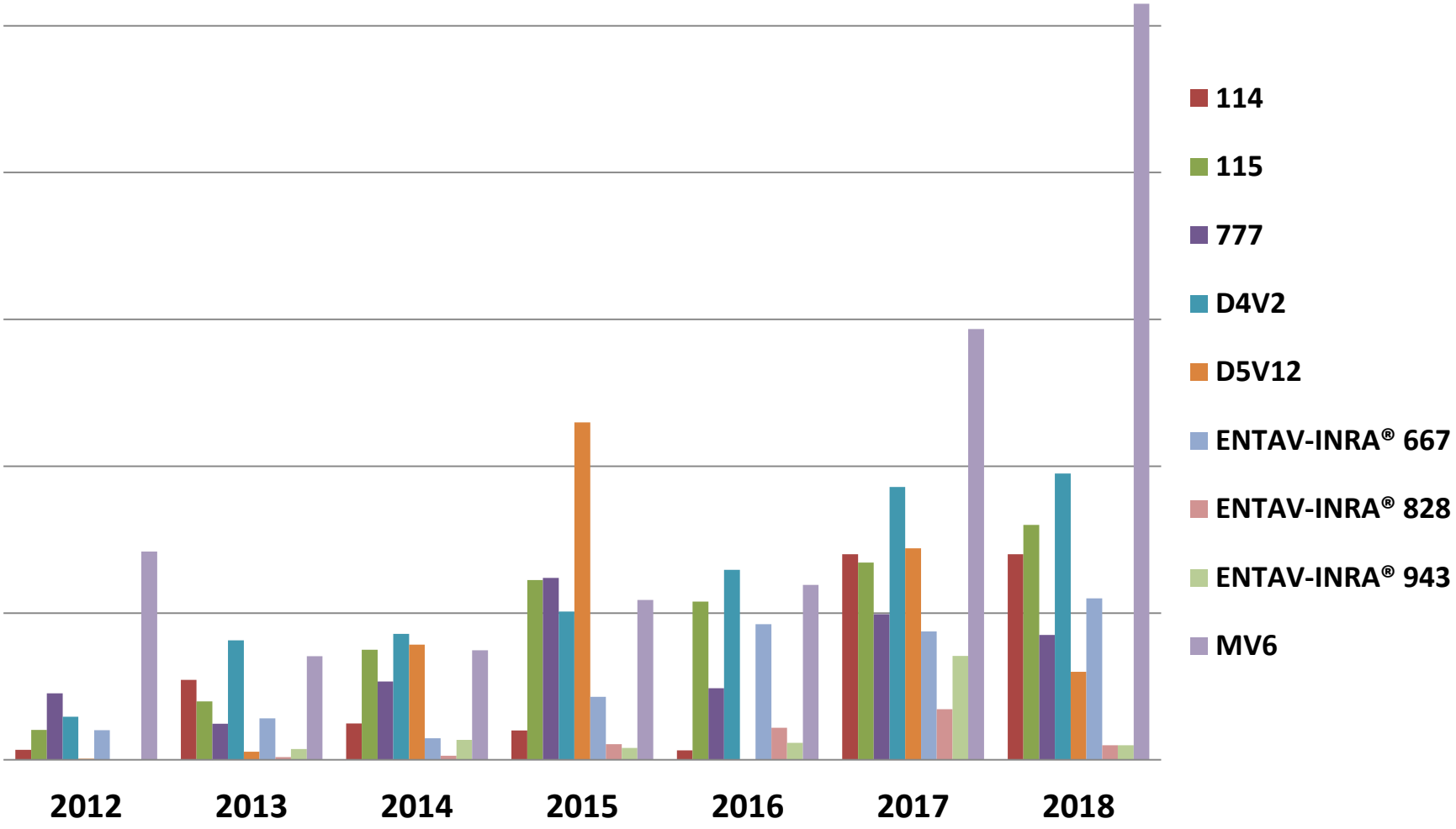
ENTAV-INRA® 943

ENTAV-INRA® 828 **2010**

# Yalumba Nursery % supply 2012-2018



# Yalumba Nursery Pinot Noir clone Supply 2012-2018



# Trends from Burgundy pers comm. Laurent Audeguin (IFV)

- The recent tendency is for medium to a bit higher yielding clones. Driven by:
- - downy mildew, drought, hailstorms
- 115 is popular than it used to be.
- 667, 828, 777, 459 and champagne clones 872 and 927 currently preferred.

# Trends from Central Coast, California

pers comm. Larry Bettiga (extension officer for USDA)

- Pommard selection (originally FPS04, now FPS91) might be the most planted followed by 777, 667, 115 in more recently planted vineyards.
- Vineyard sourced material from Chalone, MT Eden and Swan are common (both certified and uncertified).
- There are also plantings of other Dijion selections such as 113, 114 and more recently 828 and 459 and some FPS 2A (G5V15/D2V6)
- With the current issues of leaf roll and red blotch virus there is a major effort to plant certified materials and conduct virus monitoring of nursery material.

# Trends from Oregon

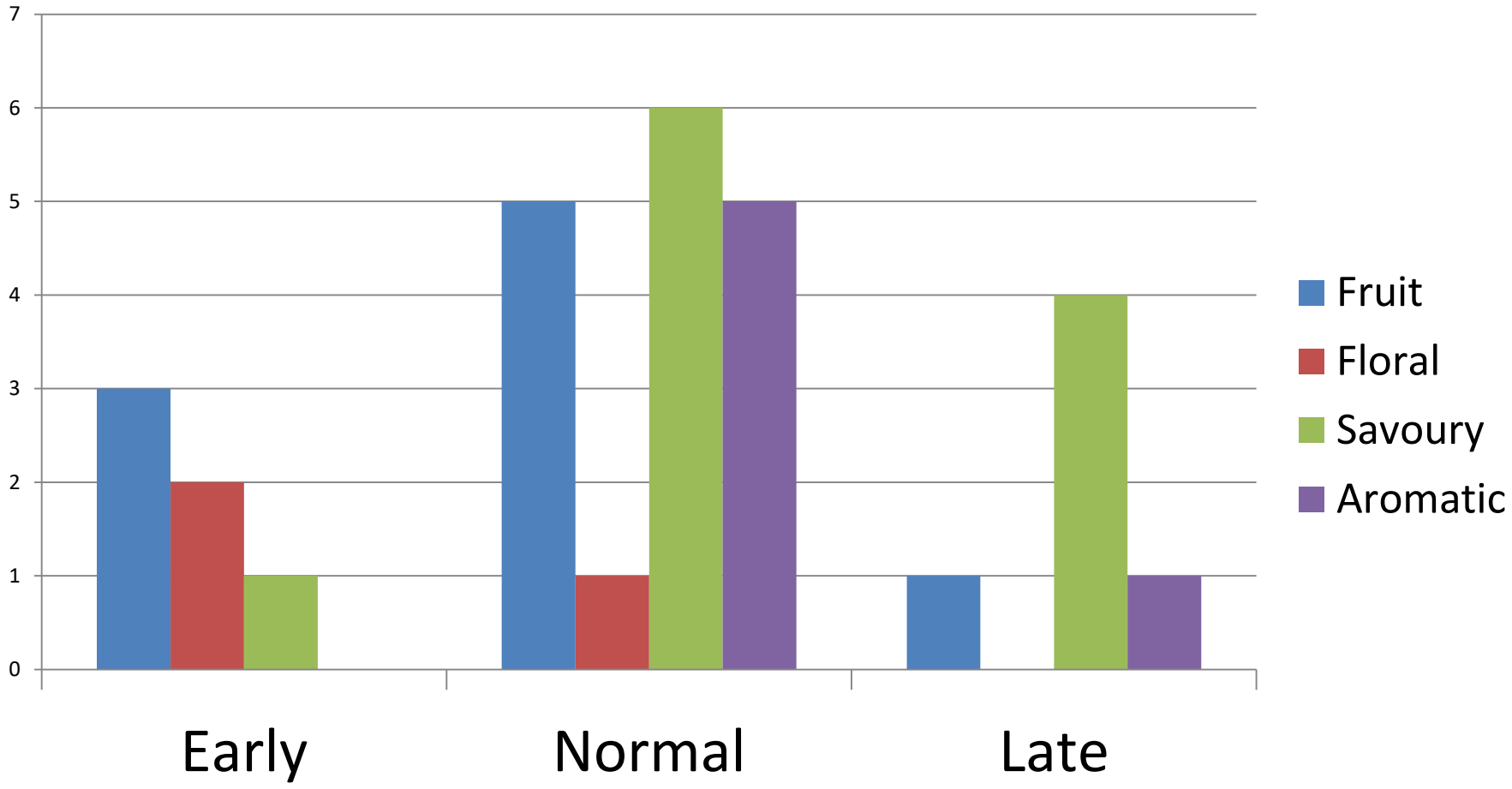
pers comm. Jerry Judkins (Inland Desert Nursery)

- Dijon and Pommard dominate plantings.
- Warmer sites preference for 02A (Wadensville), Mariafeld, Pommard, while Dijon clones preferred in cooler Willamette Valley
- Growers experimenting with new, clean ‘Heritage’ selections Swan and Mt Eden

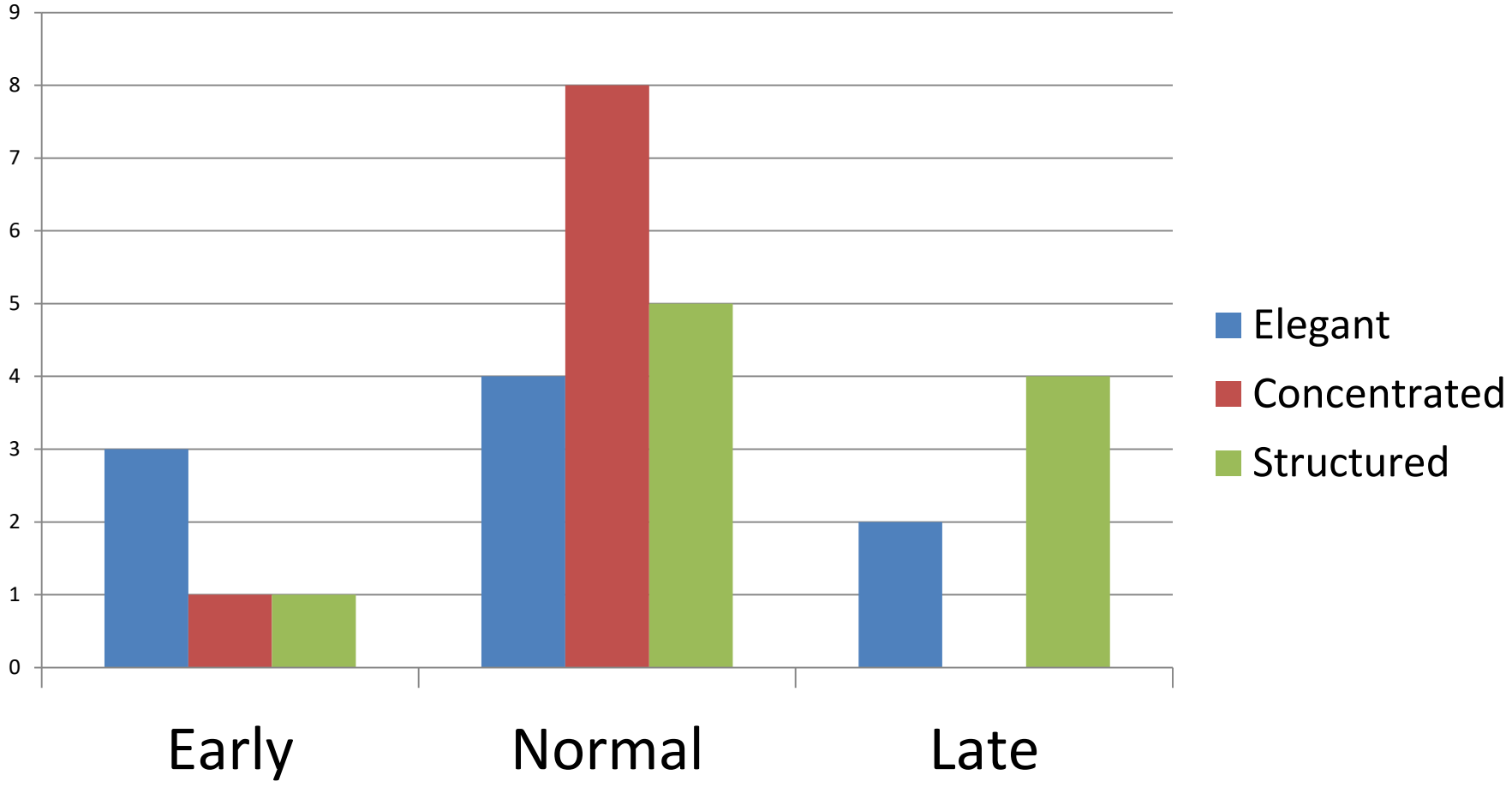
# Survey: Background

- Better understand the relationship between clone, site and climate and their impacts on sensory and style attributes ***i.e. where should I plant clone x to get response y***
- 29 responses
  - MV6 x 20 (68%)
  - 114 x 3
  - D5V12 x 3
  - 115 x 2
  - 777 x 1
- Mostly Clay-loam soils (x 24), balance sandy loam

# Impact of ripening time on sensory attributes



# Impact of ripening time on style attributes



# Survey: General trends

- Early tends to fruity and elegant
- Normal- broader scope but strong association with concentration
- Late tends to savoury and structure
  - Structured almost always associated with Savoury (8 of 11)

# D5V12

- 3 responses
- High yield  x 2
- High bunch size x 2
- Fruity x 2, aromatic x 1
- Structured, concentrated, elegant

# 114

- 3 x responses- all on 5CT
- No trend on yield-but all 3 medium bunch size
- Floral x 1, Savoury x 2
- Concentrated x 3

# 115

- 2 responses
- Elegant and savoury from average warmer site in Mornington Penn.
- Aromatic and concentrated from cooler site in Macedon

# MV6: impact of site on sensory and style

| | Aromatic (4) | Fruity (7) | Savoury (8) |
|---|---|---|---|
| **Site Vigour** | Medium | Medium | Medium-High |
| **Relative Yield** | Medium | Medium | Low-Medium |
| **Relative Ripening** | Normal-Late | Normal-Early | Normal-Late |

| | Elegant (6) | Concentrated (5) | Structured (9) |
|---|---|---|---|
| **Site Vigour** | Medium | Medium | Medium-High |
| **Relative Yield** | Medium | Medium-Low | Low-Medium |
| **Relative Ripening** | 3 x N, 2 x E, 1 x L | Normal-Early | Normal-Late |

# Pinot Noir clones: the future

# New releases

| Clone number | Identity and availability | | Agronomic data | | Technical data | |
|---|---|---|---|---|---|---|
| | *Origin* | *Selection* | *Fertility* | *Production level* | *Sugar content* | *Potential color* |
| | *Year approved* | *Agronomic references* | *Weight of grape bunches* | *Vigor* | *Total acidity* | *Tannic structure* |
| | *Growing surface area* | | *Size of berries* | *Sensitivity to Botrytis* | *Aromatic intensity* | *Oenological aptitudes* |
| **1184** | Saône-et-Loire | CA71 - IFV | low to medium | medium | medium to high | medium to high |
| | 2012 | Bourgogne | low | | medium | medium to high |
| | | | medium | medium | | wines appreciated for their color and mouth structure |
| ENTAV INRA® | Lower production level. Color intensity higher than average | | | | | |
| **1185** | Saône-et-Loire | CA71 - IFV | medium to high | low | medium to high | high |
| | 2012 | Bourgogne | low | | medium | medium to high |
| | | | low | low | | wines appreciated for their color, aromatic complexity and mouth feel quality |
| ENTAV INRA® | Lower production level. Color intensity higher than average | | | | | |
| | Clone susceptible to millerandage | | | | | |
| **1196** | Saône-et-Loire | CA71 - IFV | medium to high | medium | high | high |
| | 2013 | Bourgogne | medium | | medium | |
| | | | medium | low | | structured wines with complex and distinctive Pinot Noir aromas |
| ENTAV INRA® | Lower production level. Color intensity higher than average | | | | | |
| | Clone slightly susceptible to millerandage but less than 1185. | | | | | |
| **1197** | Saône-et-Loire | CA71 - IFV | medium | medium | high | medium to high |
| | 2013 | Bourgogne | medium to high | | medium | |
| | | | medium | medium | high | wines appreciated for their olfactory intensity and tannin suppleness. |
| ENTAV INRA® | Lower production level. Olfactory intensity higher than average | | | | | |
| | Upright growth | | | | | |

# Preservation of diversity

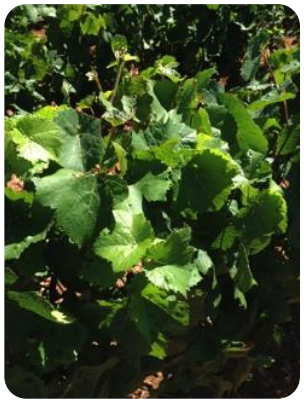
## Concept of repositories :

Permanent lifting of old vineyards = loss of intra-varietal diversity

Maintenance of numerous accessions (potential clones) without any “a priori”

Under the control of regional partners: ATVB, Chambre Agriculture Saône et Loire, CIVC

**Mont Battois – Beaune**



Source Yasmine Evieux, 2015

**Aluze - South Burgundy**


**Champagne – Gionges (in progress)**


# Selection of « Pinot fins » or « Pinot très fins »

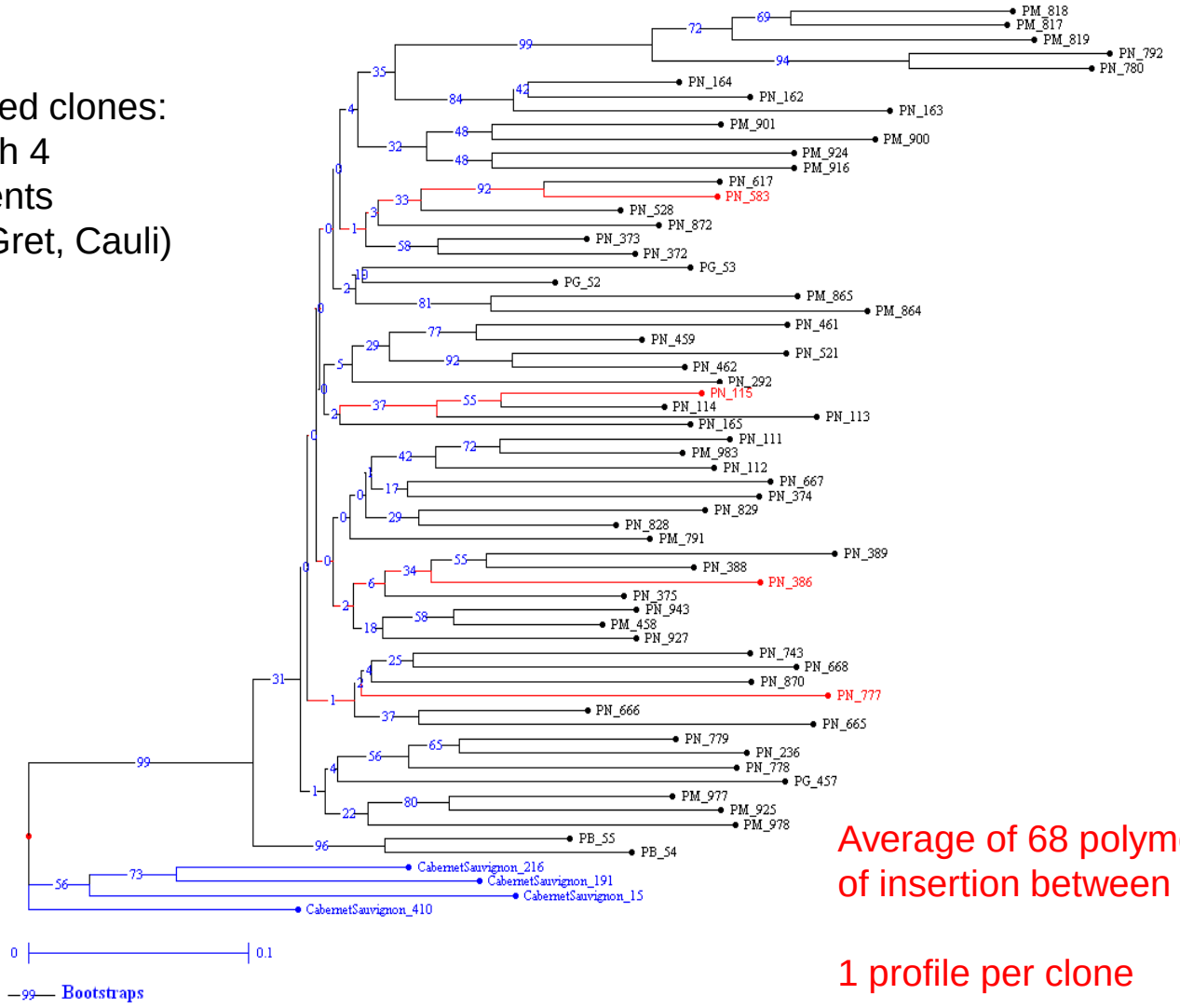


Source Robert Boidron « Le Livre du Pinot noir »

Local selections “Elite”
Mainly for “Grands crus”
Less sanitary and technological investigation / Clonal selections

# Clonal identification ?

Diversity of registered clones:
SSAP approach with 4 transposable elements
(Cop.10, Gyp.19, Gret, Cauli)

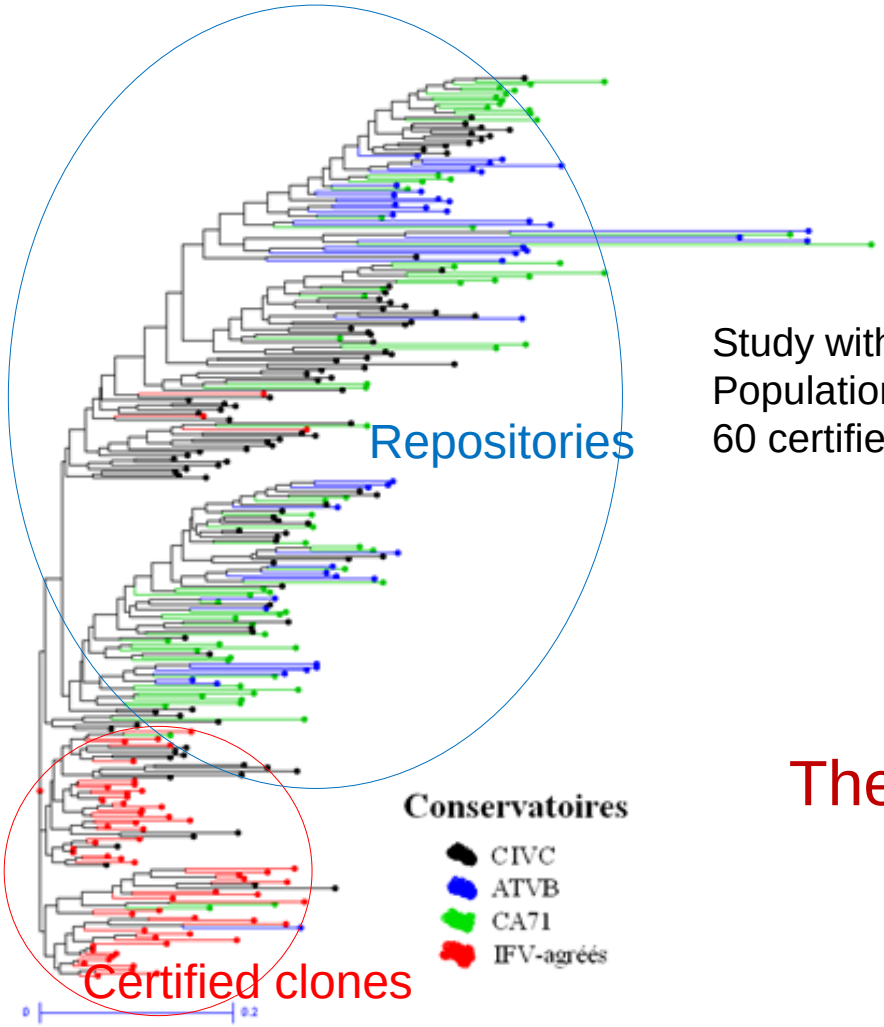



Average of 68 polymorphisms of insertion between 2 clones

1 profile per clone

G. Carrier, 2011

# Clonal identification ?




Study with Gret-1
Population of 254 clones coming from 3 repositories
60 certified clones + clones held in Espiguette collection

There is still a large diversity to explore !!!

G. Carrier, 2011

# Future developments

Preservation of diversity : the only source of future selections !

What is in the pipeline ?

Clones 1184,1185, 1196, 1197 and others to come

Specific needs of the wine industry

Combining ‘up-right’ canopy with beneficial growing aptitudes and technological standards

Later maturing clones

Long peduncles : easier harvest

Etc…

Clonal identification ?

A set of markers = repeatability (seasonal, environmental, physiological)

A universal clone does not exist...

# Clone Selection in Australia

- French have spent many $'s on clone selection
- We have undertaken one round of selection in 1960's which resulted in release of MV6 in 1971 (along with MV4 and MV6)
- Is it time to re-visit clone selection in Australia?
- Imports from FPS (Swan and Mt Eden)

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http://www.entav-inra.fr/en/