Cabernet franc: experiences from Bordeaux for the Fingerlake wine industry

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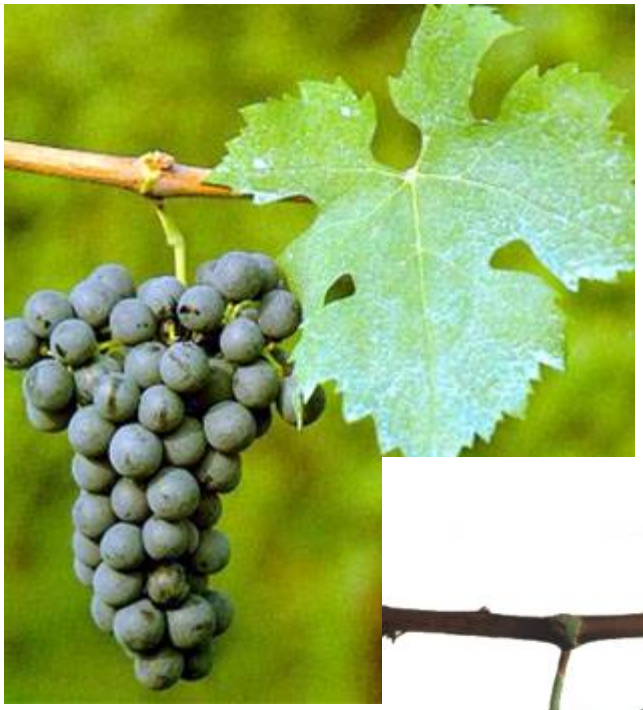
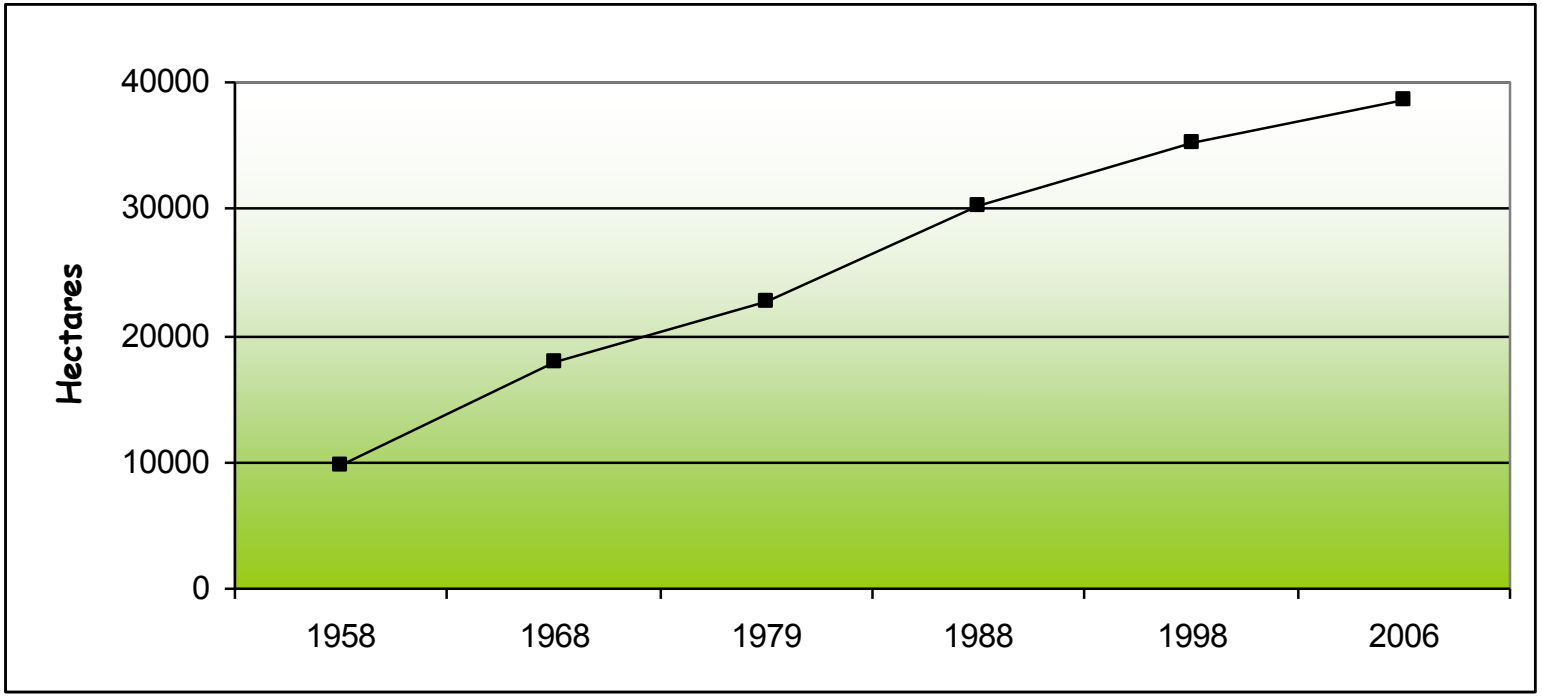
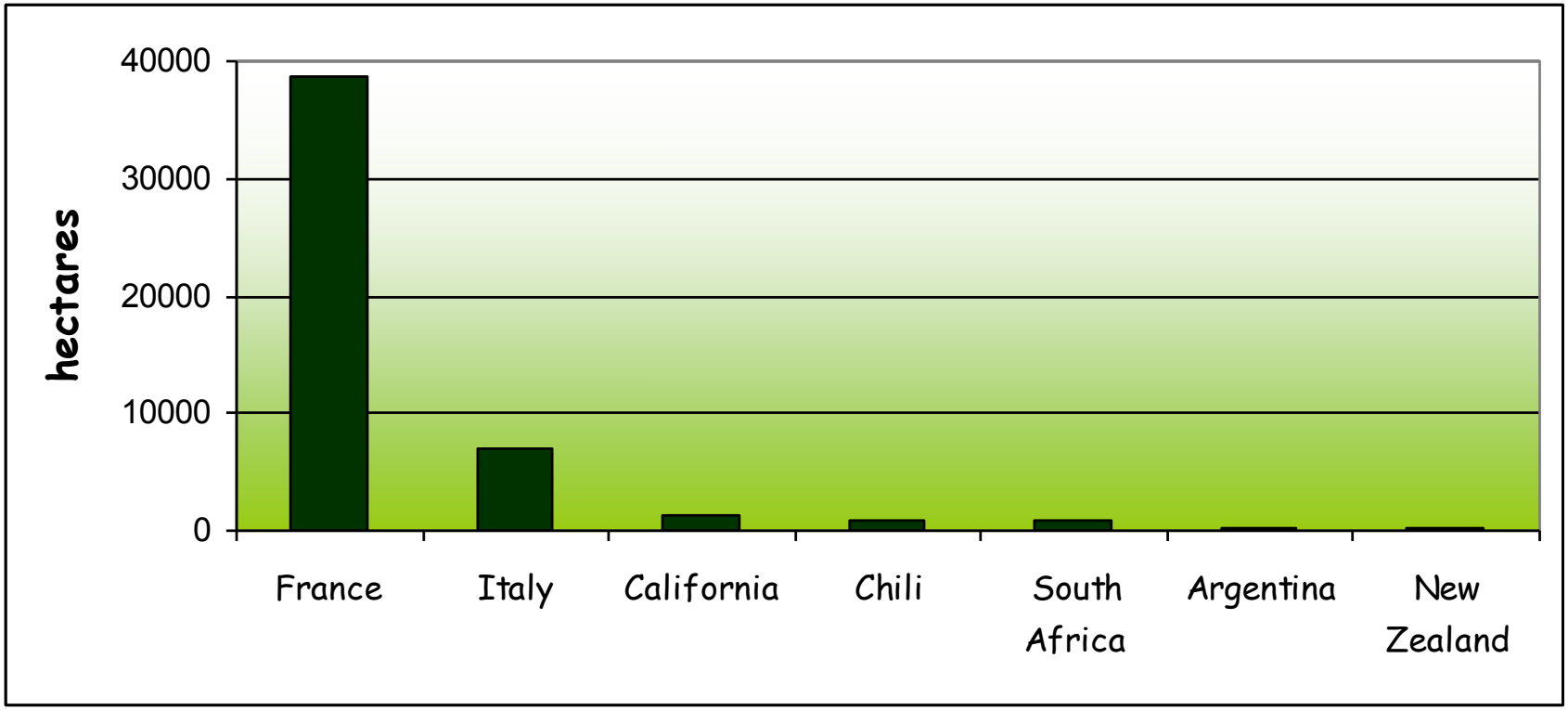
What does Cabernet franc look like?



Cabernet franc plantations in France



Cabernet franc around the world



Some great wines made with a high proportion of Cabernet franc

Proportion of Cabernet franc in Bordeaux

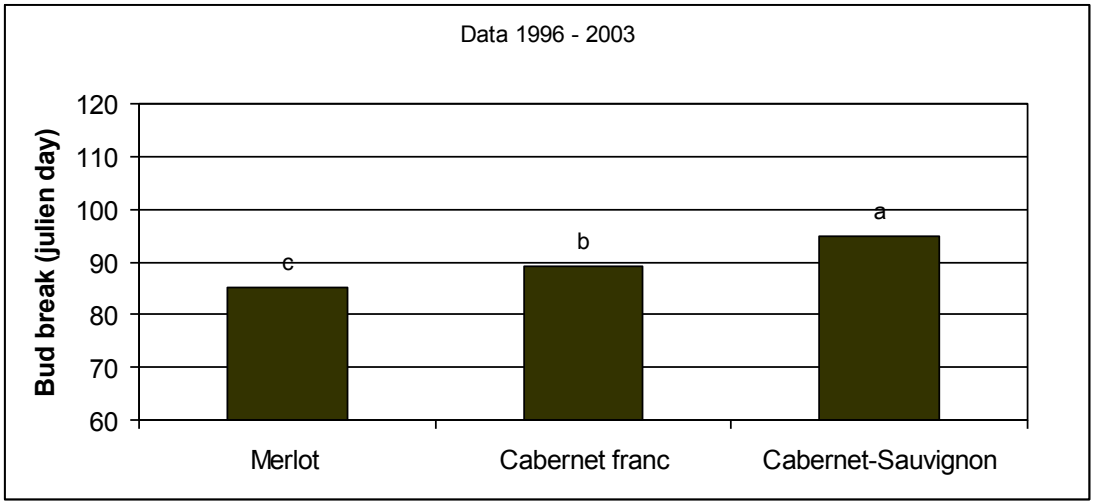
Red varieties	1988	2000	2007	2013
Merlot (ha)	44180	61438	69138	69416
Merlot (%)	52%	58%	62%	65%
Cabernet-Sauvignon (ha)	24677	29210	28347	24627
Cabernet-Sauvignon (%)	29%	27%	25%	23%
Cabernet franc (ha)	13356	14100	13218	11013
Cabernet franc (%)	16%	13%	12%	10%
Côt (Malbec) (ha)	2120	1060	974	1077
Côt (Malbec) (%)	3%	1%	1%	1,0%
Petit Verdot (ha)		389	479	677
Petit Verdot (%)		0,4%	0,4%	0,6%
Carmenère (ha)				38
Carmenère (%)				0,04%
Total (ha)	84333	106107	112156	106933
% of total	77%	86%	89%	88%

Characteristics of Cabernet franc at Cheval Blanc compared to Merlot and Cabernet Sauvignon

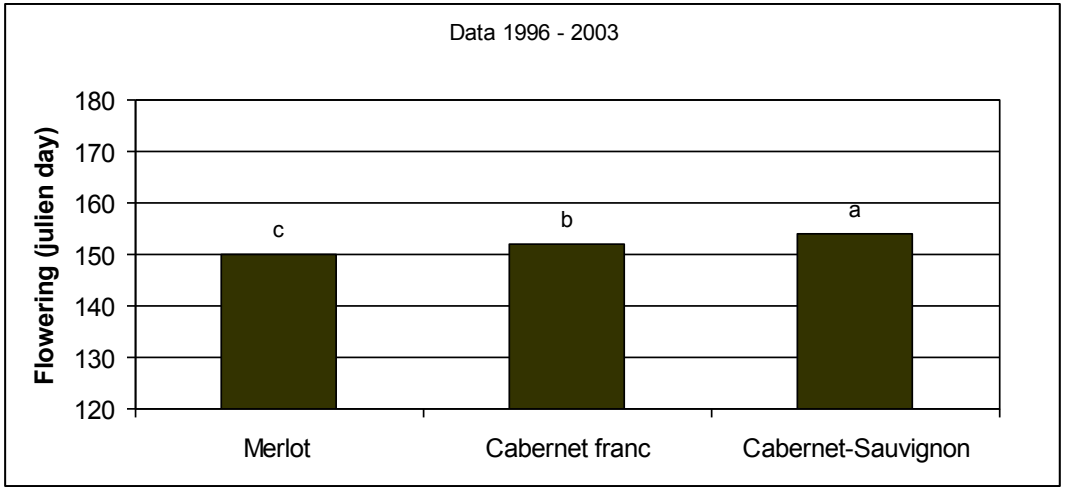
Data collected from

1996 - 2003

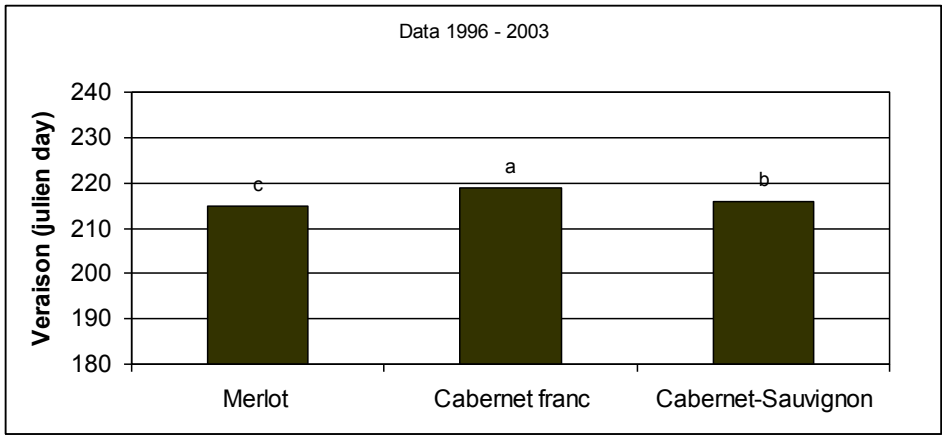
Bud Break around April 1st



Flowering around June 1st



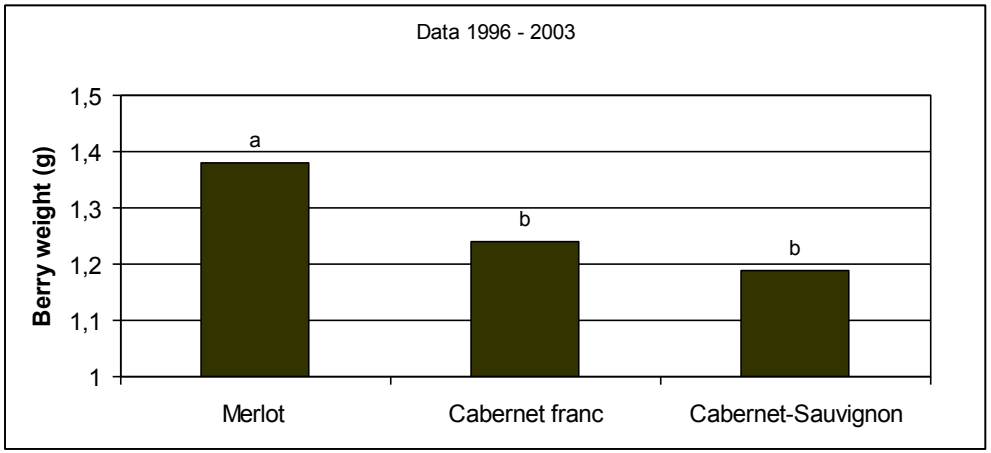
Veraison during the first decade of August



Harvest late September or early October

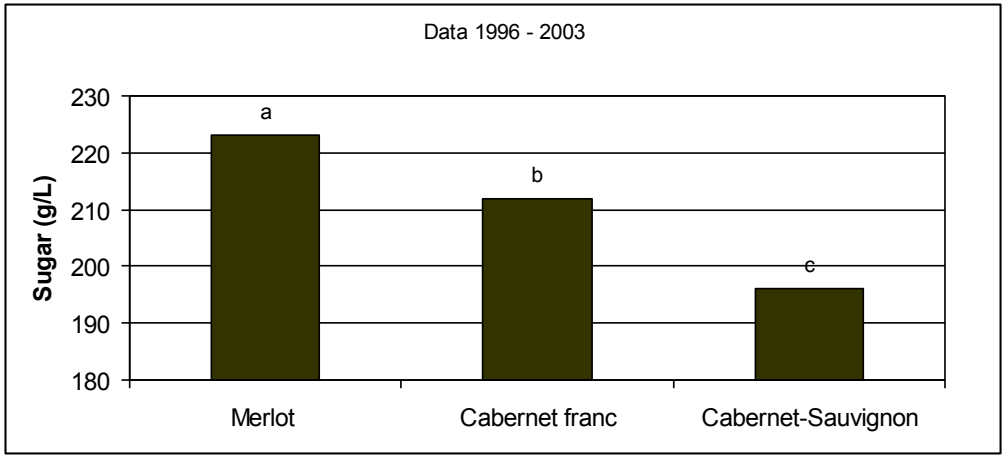
- Around 50 days after veraison
- One week to ten days after Merlot
- One week to ten days before Cabernet-Sauvignon

Berry weight

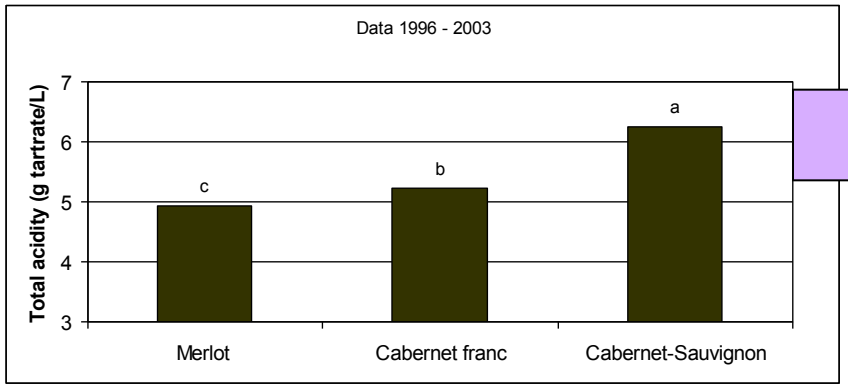


Grape sugar

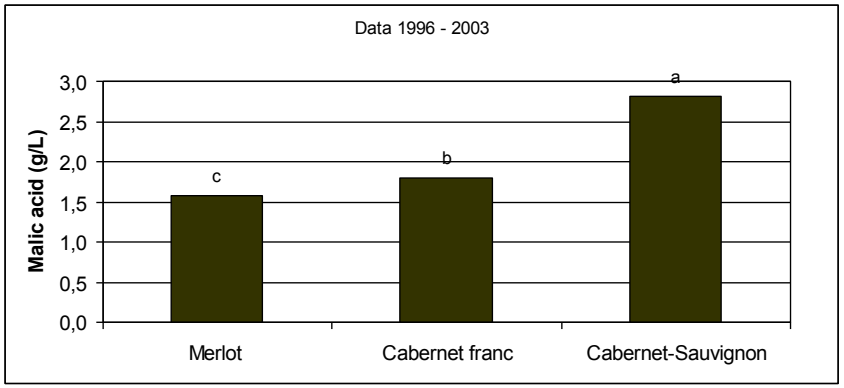
Potential alcohol between:
13 and 13.5 for Merlot
12.5 and 13 for Cabernet franc
11.5 and 12 for Cabernet-Sauvignon



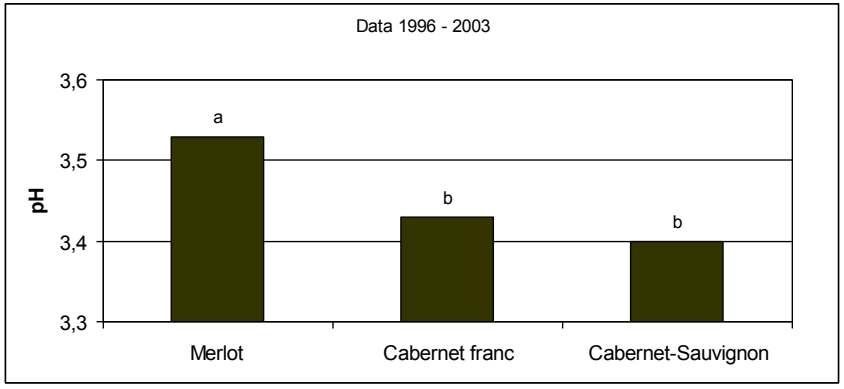
Total acidity



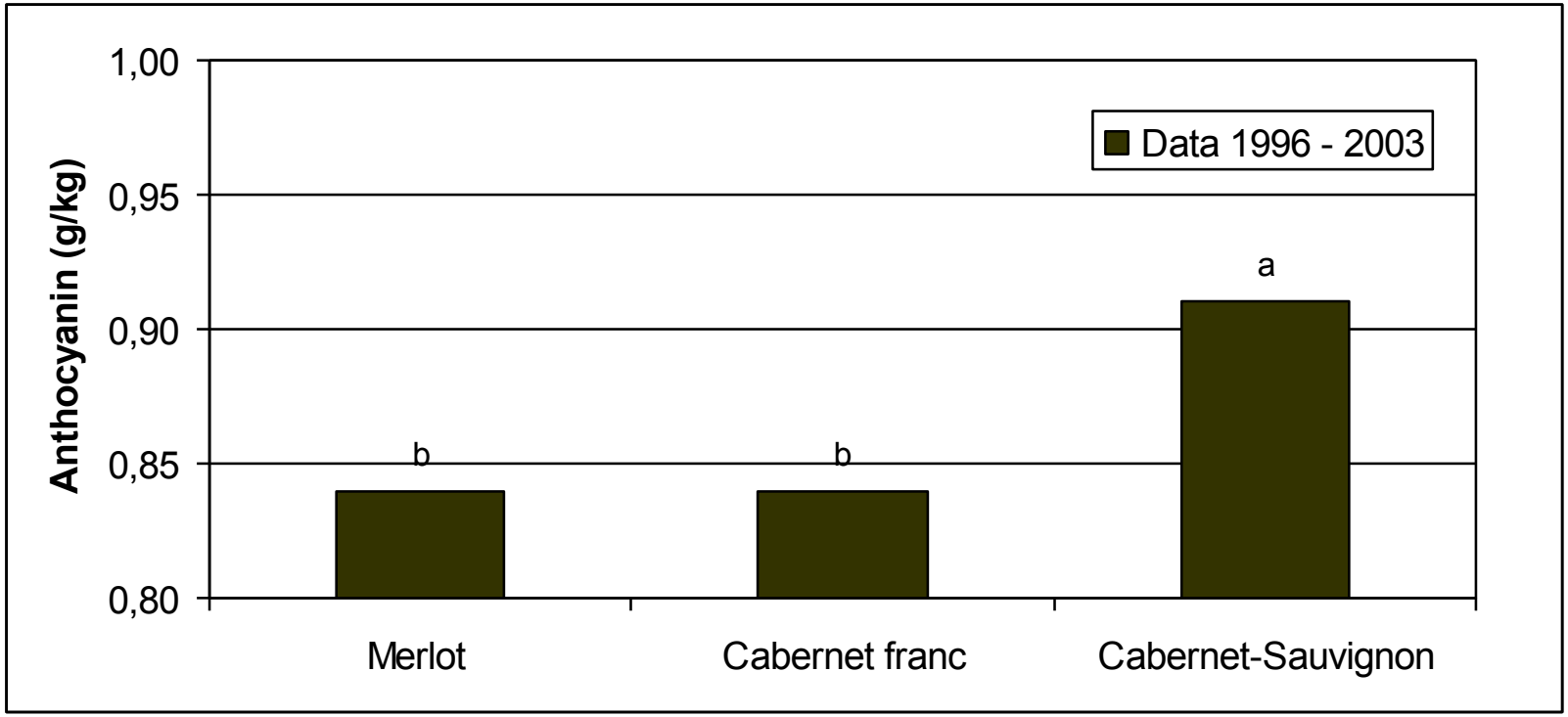
Malic acid content



pH



Anthocyanin content



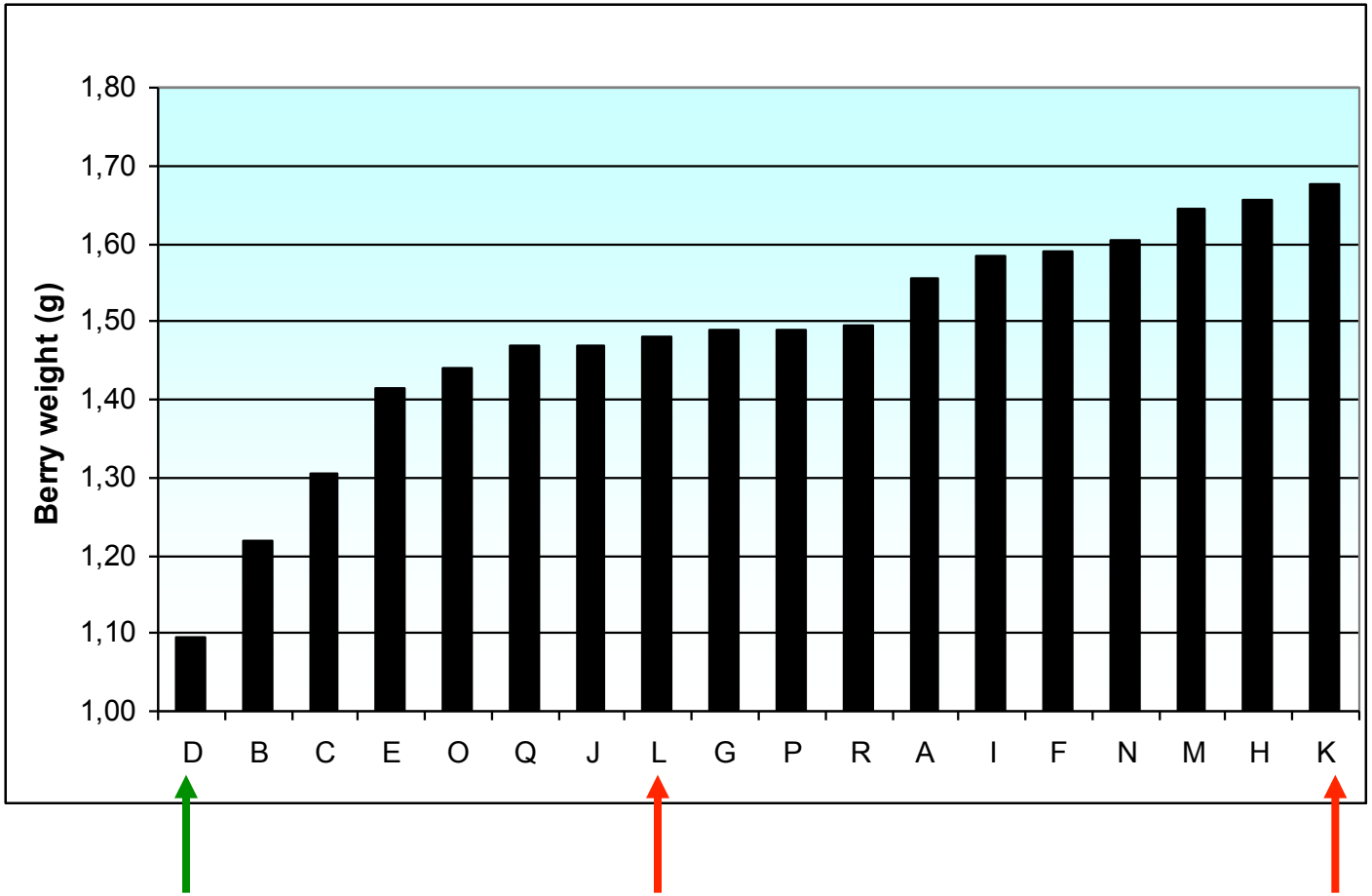
Clonal variability of Cabernet franc

Data: 2008, private clonal selection

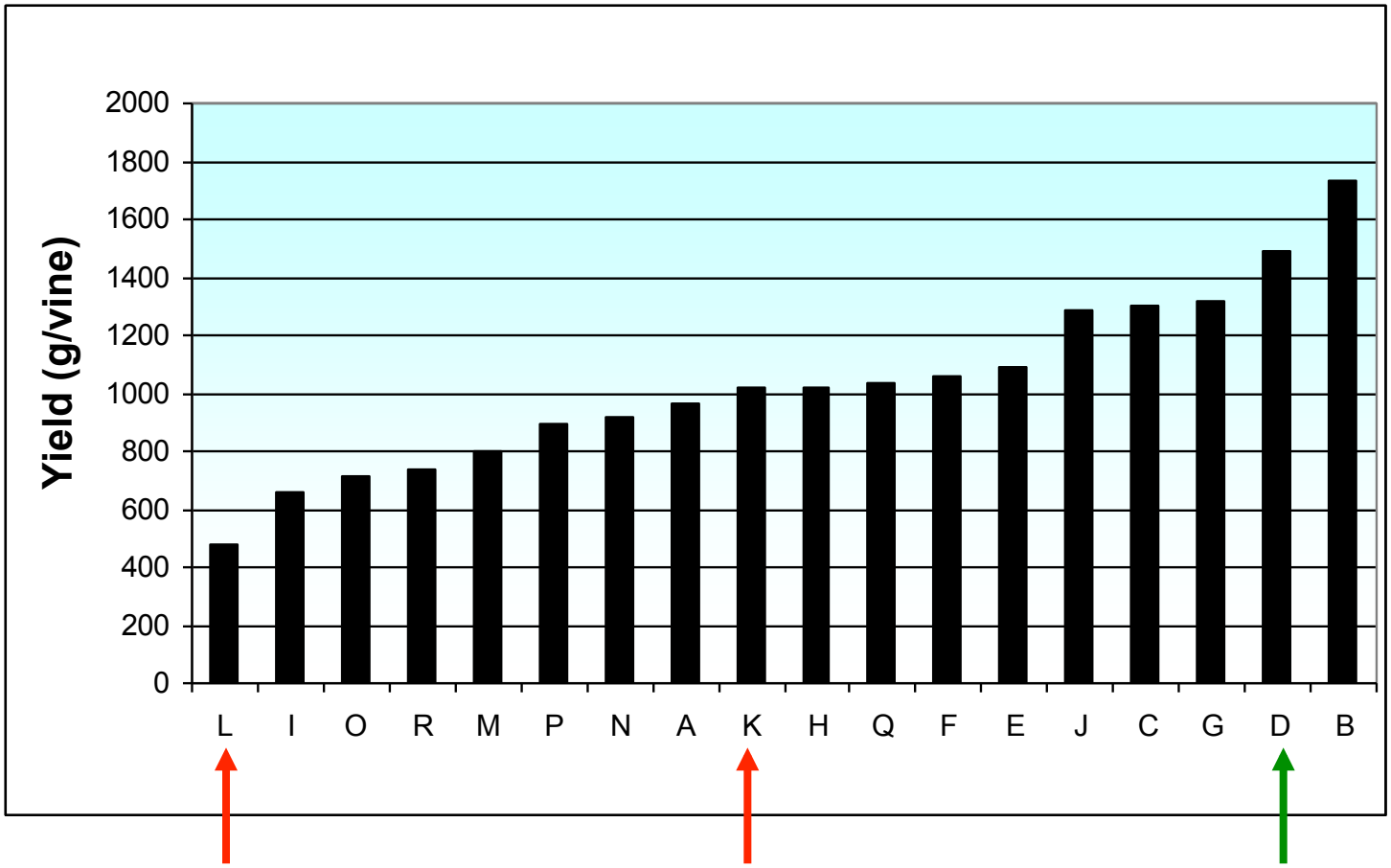
Clonal variability in Cabernet franc

- Clonal variability is high in Cabernet franc
- Obviously, no high quality clones are available
- Some estates carry out their own clonal selection
- This is what Cabernet franc should look like:
  - Loose bunches
  - Small beries

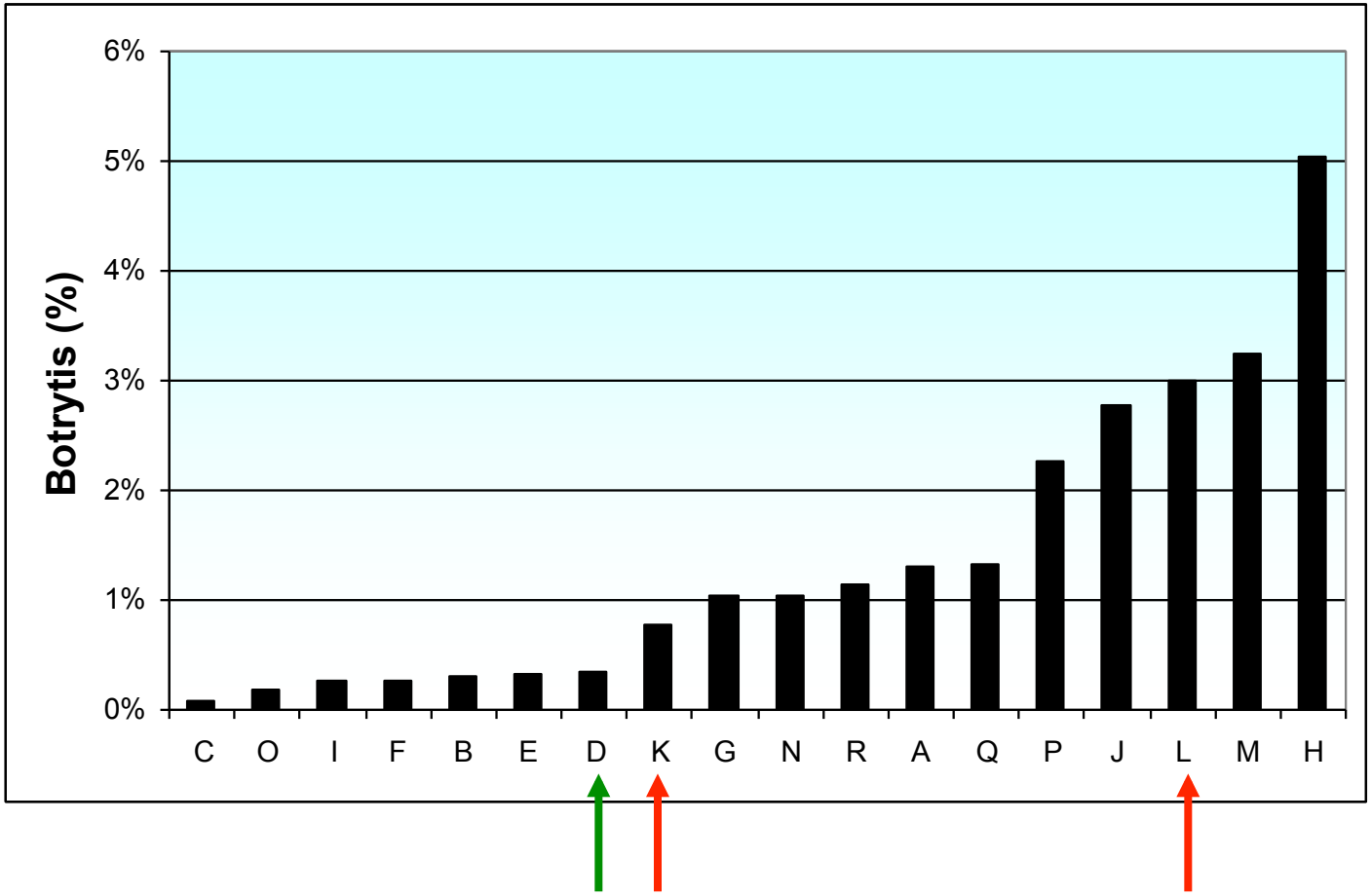
Clonal variability in berry weight



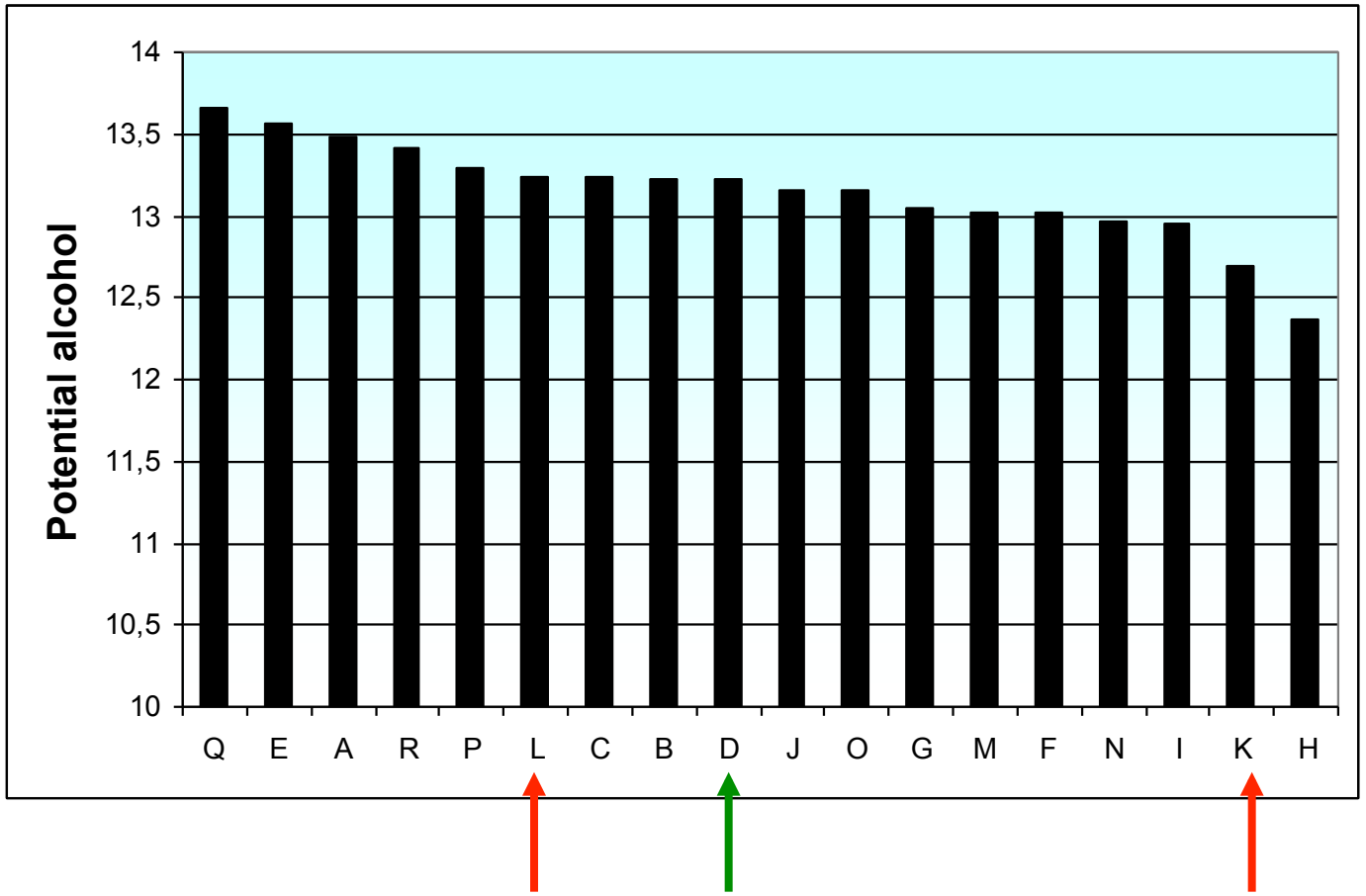
Clonal Variability in yield



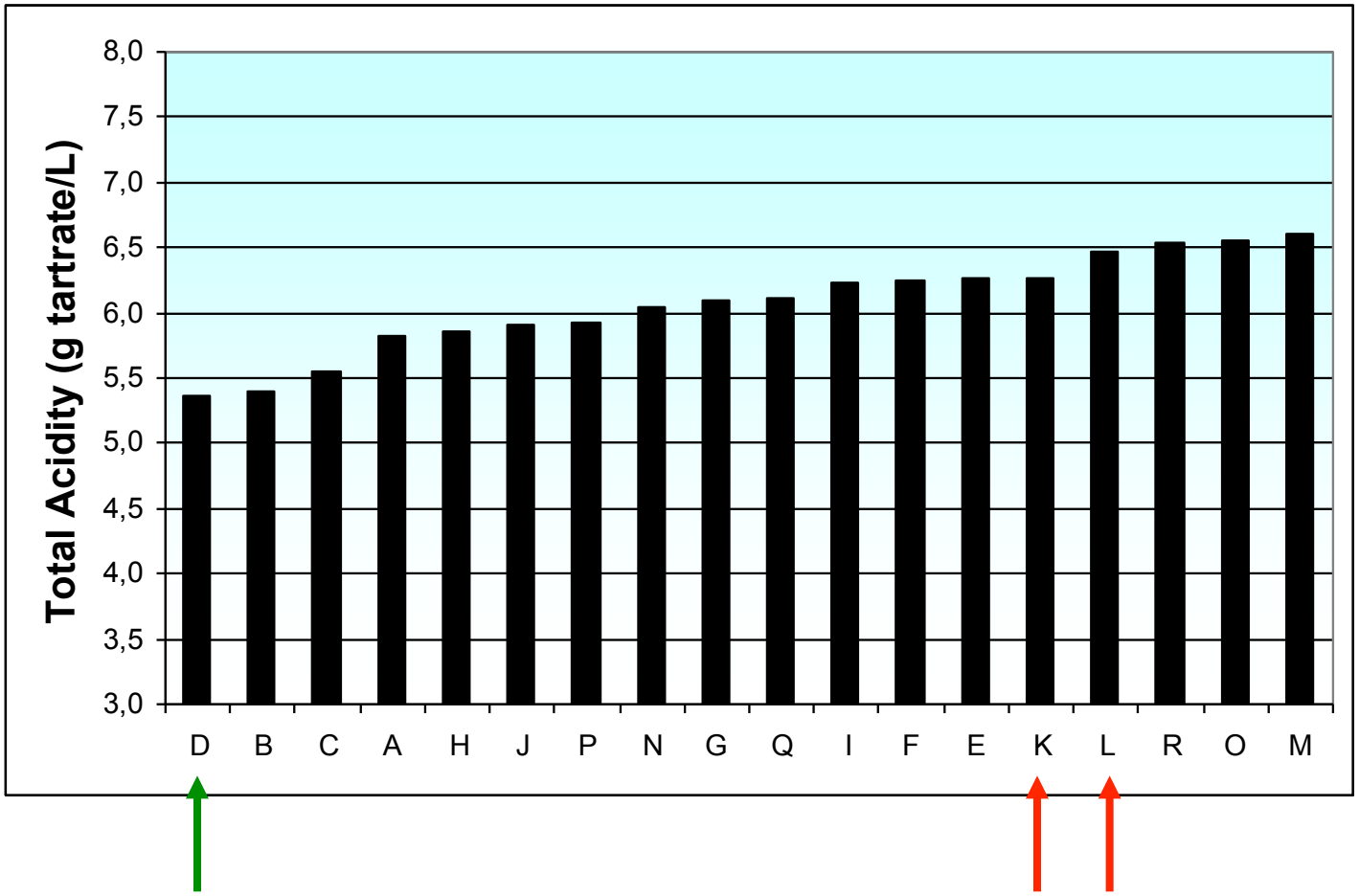
Clonal variability in sensitivity to Botrytis



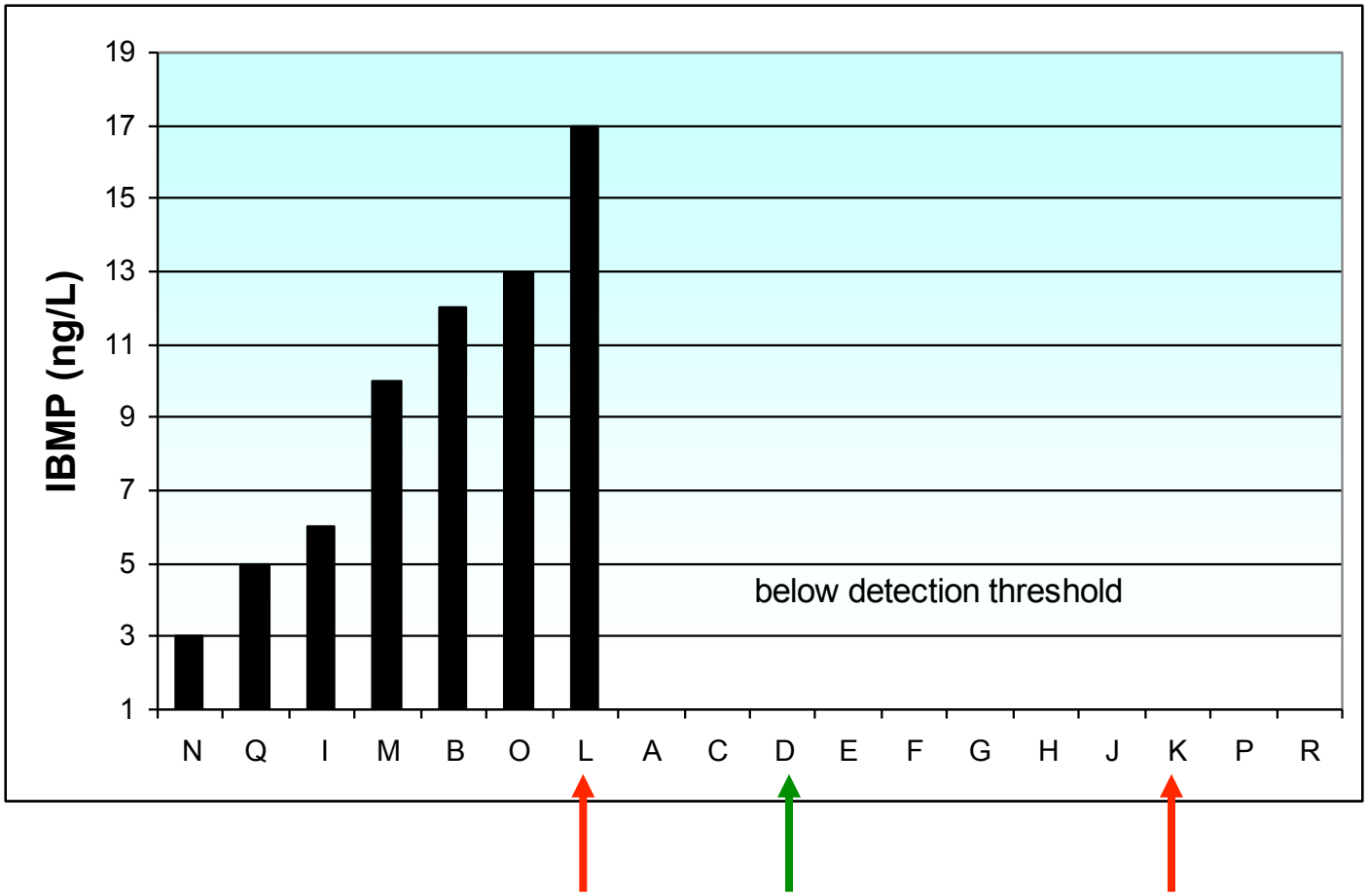
Clonal variability in berry sugar content (expressed in potential alcohol)



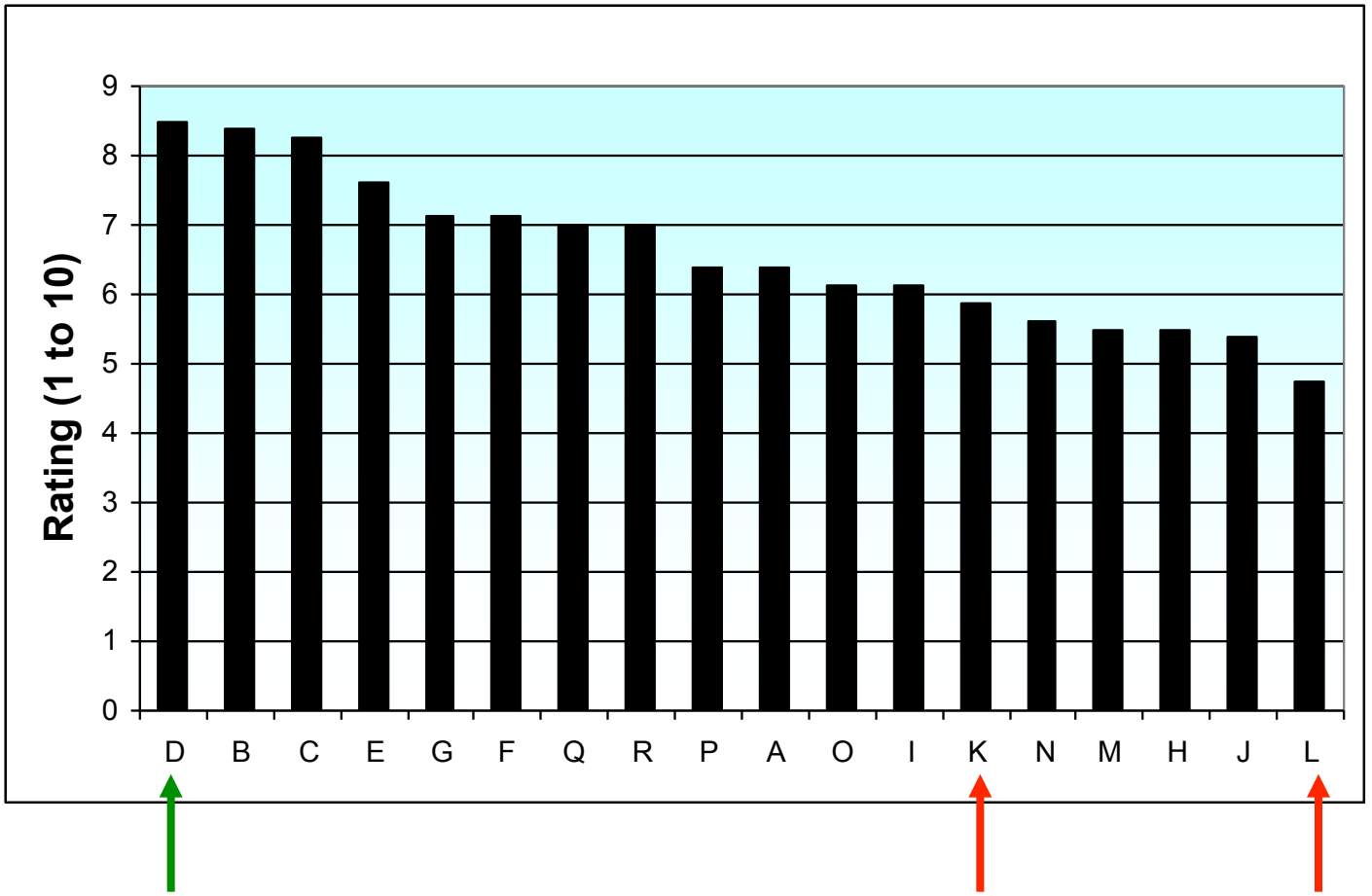
Clonal variability in total acidity



Clonal variability in Isobutyl Methoxy Pyrazines (IBMP)



Rating (loose bunches, small berries, no shatter, good taste…)

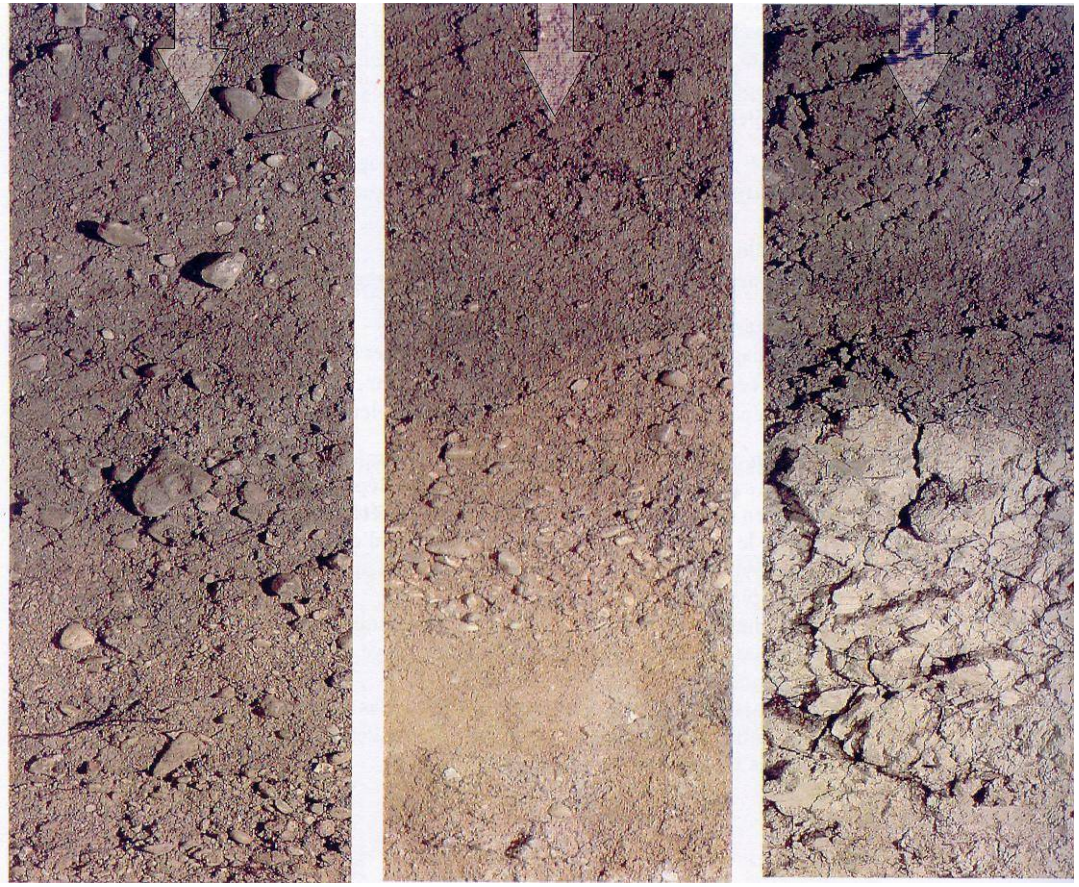


Selecting a clone: a combination of criteria

- Clone L is very low yielding, sentive to *Botrytis* and produces grapes with high IBM content
- Clones K produces big berries with low sugar content
- Clone D obtains high ratings, and produces small beries, with average sugar content and low acidity and is not sensitive to *Botrytis*

Cabernet franc: a variety that reacts strongly to the soil type

Cheval Blanc has three different soil types

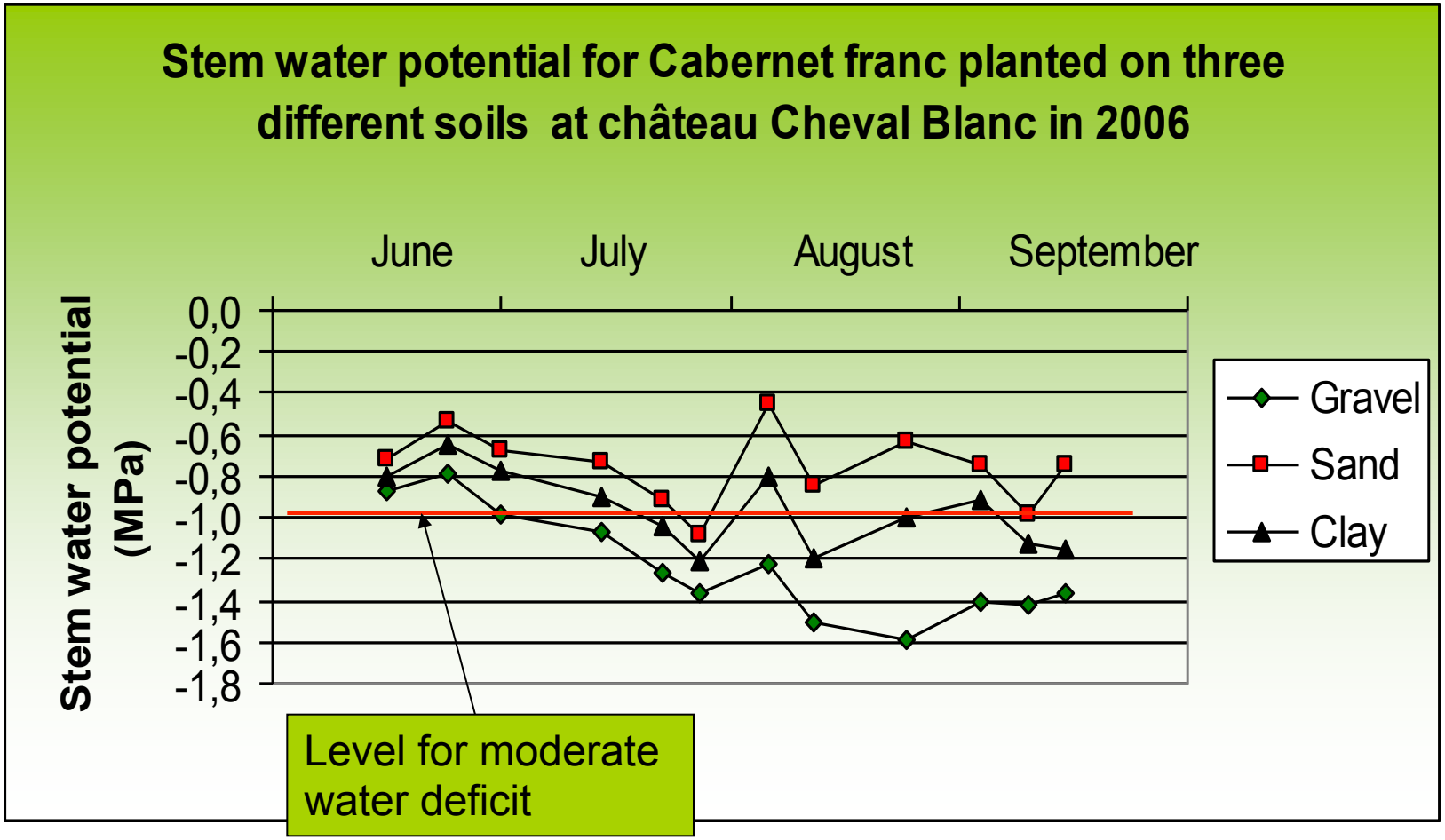


Gravel Sand Heavy clay

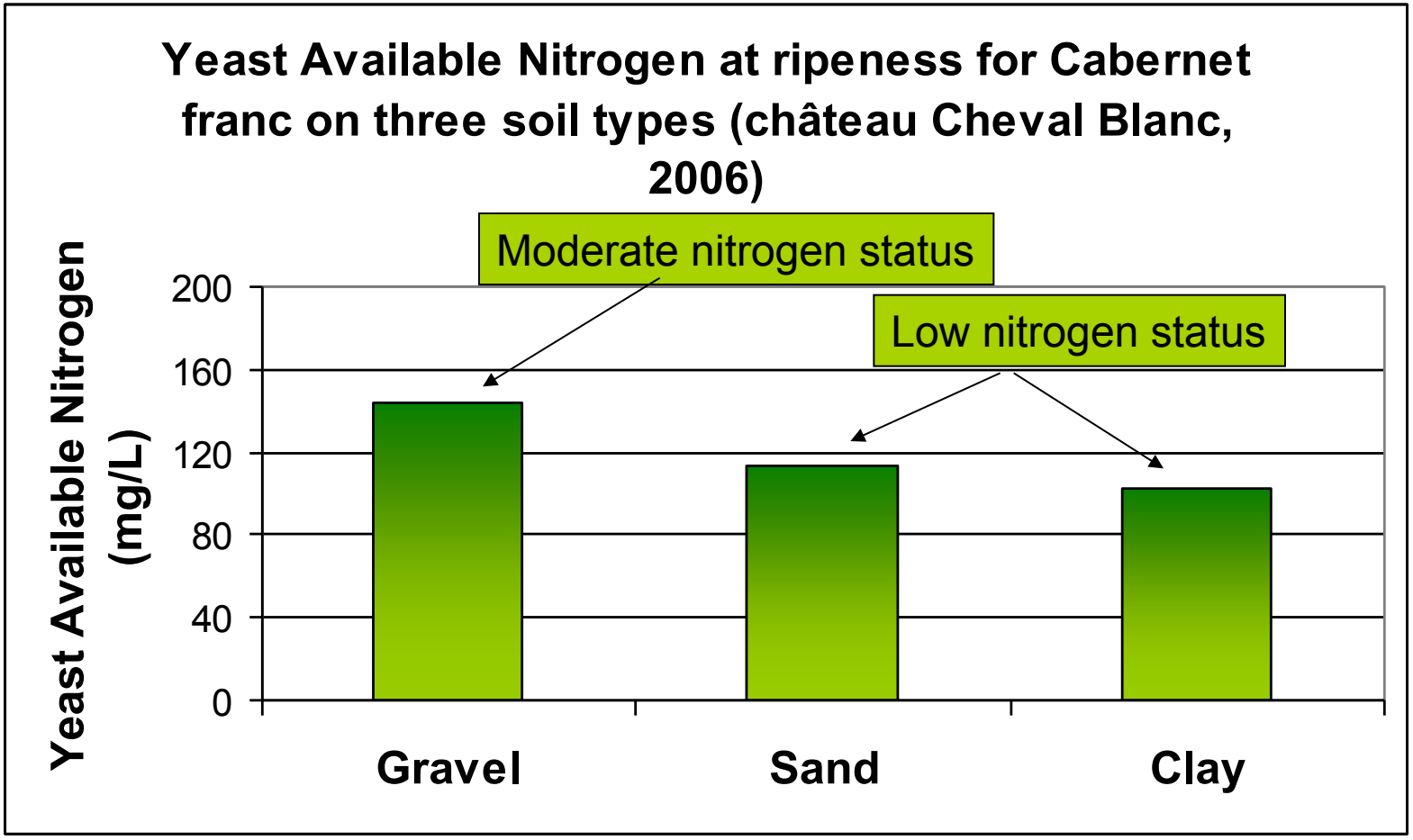
Rôle of environmental stress

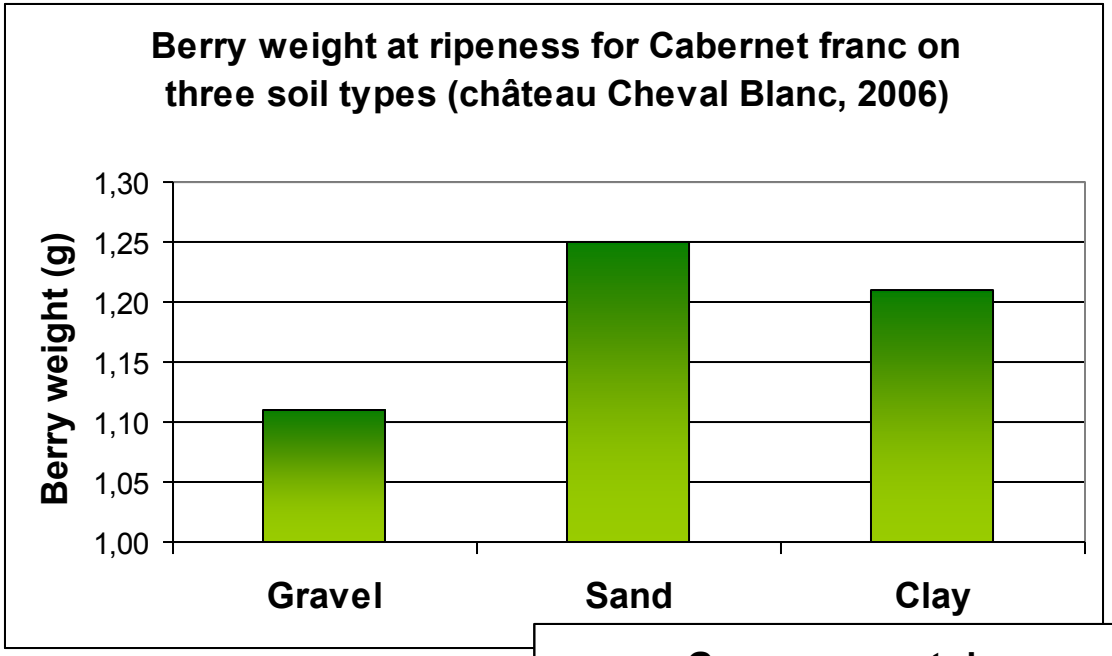
- Some form of environmental stress is needed to produce great Cabernet franc
- This can be water deficit
- Or limited nitrogen availability

Vine water status is highly variable on these three soils

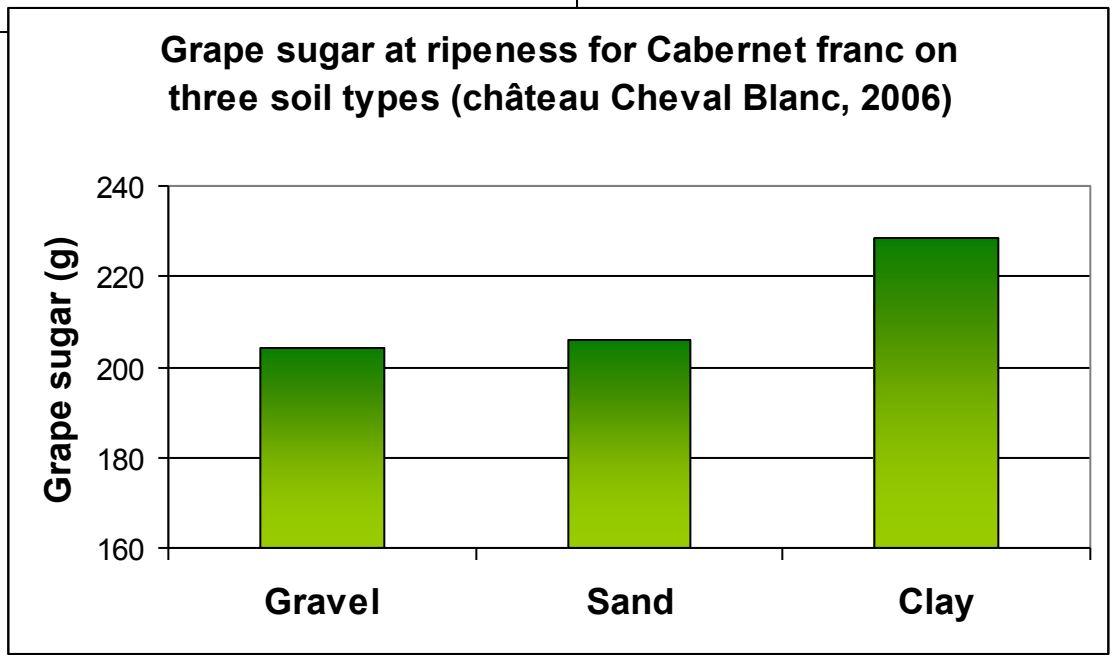


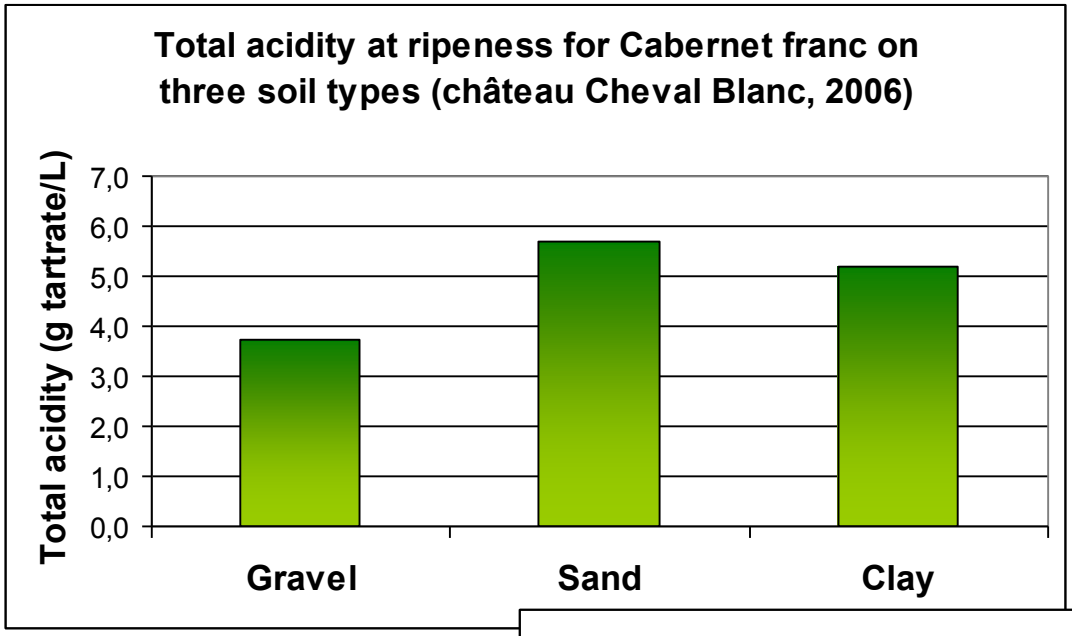
Vine nitrogen status is also variable



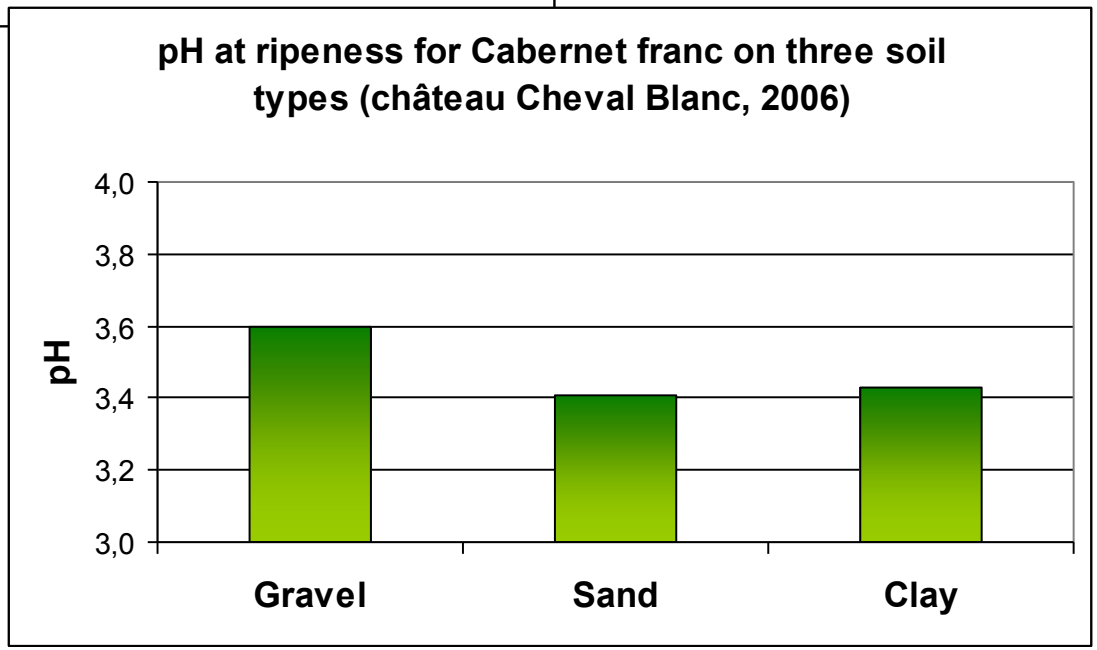


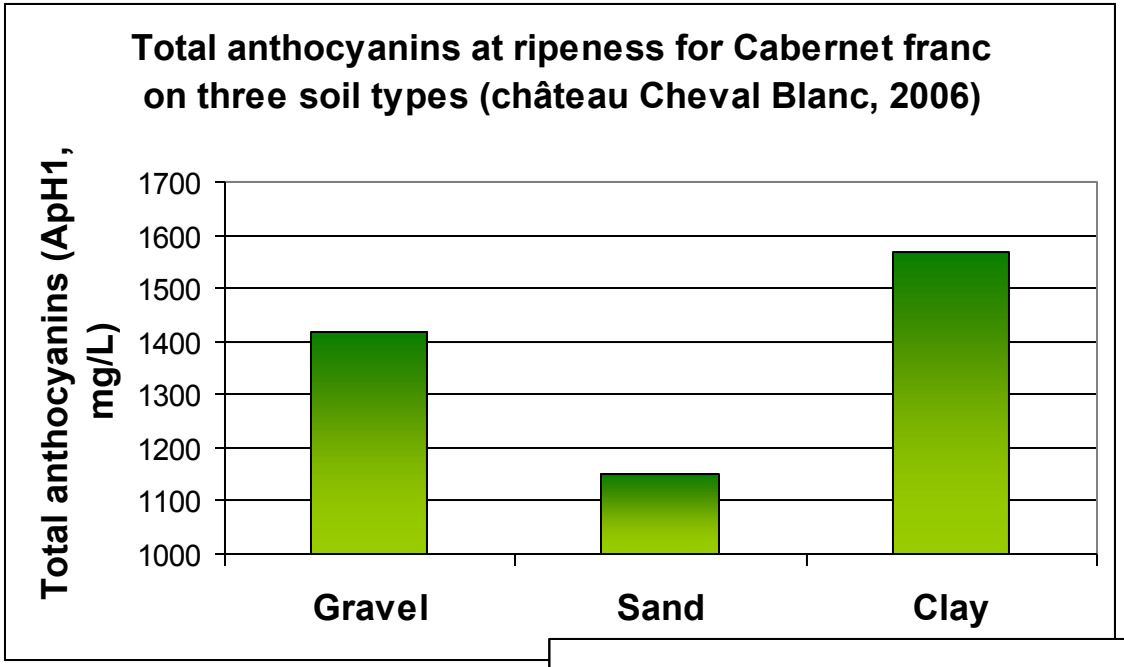
Small berries on gravel, high sugar on clay



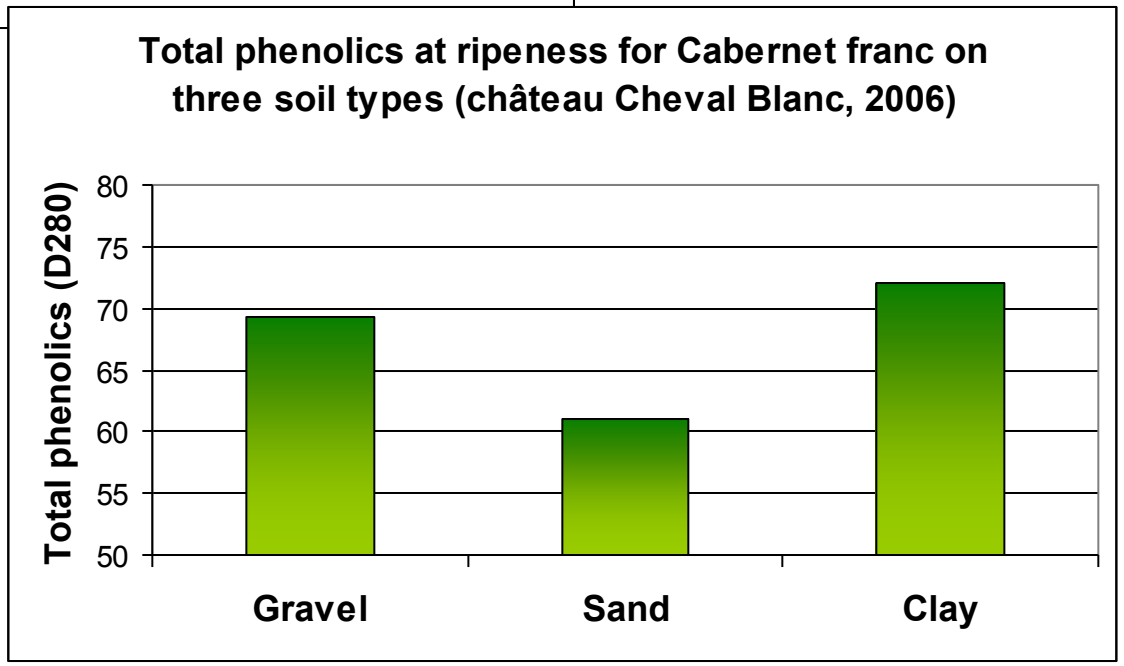


Total acidity is high on sand and low on gravel





Anthocyanins and tanins are high on clay and moderately low on sand



Effect of water deficit stress

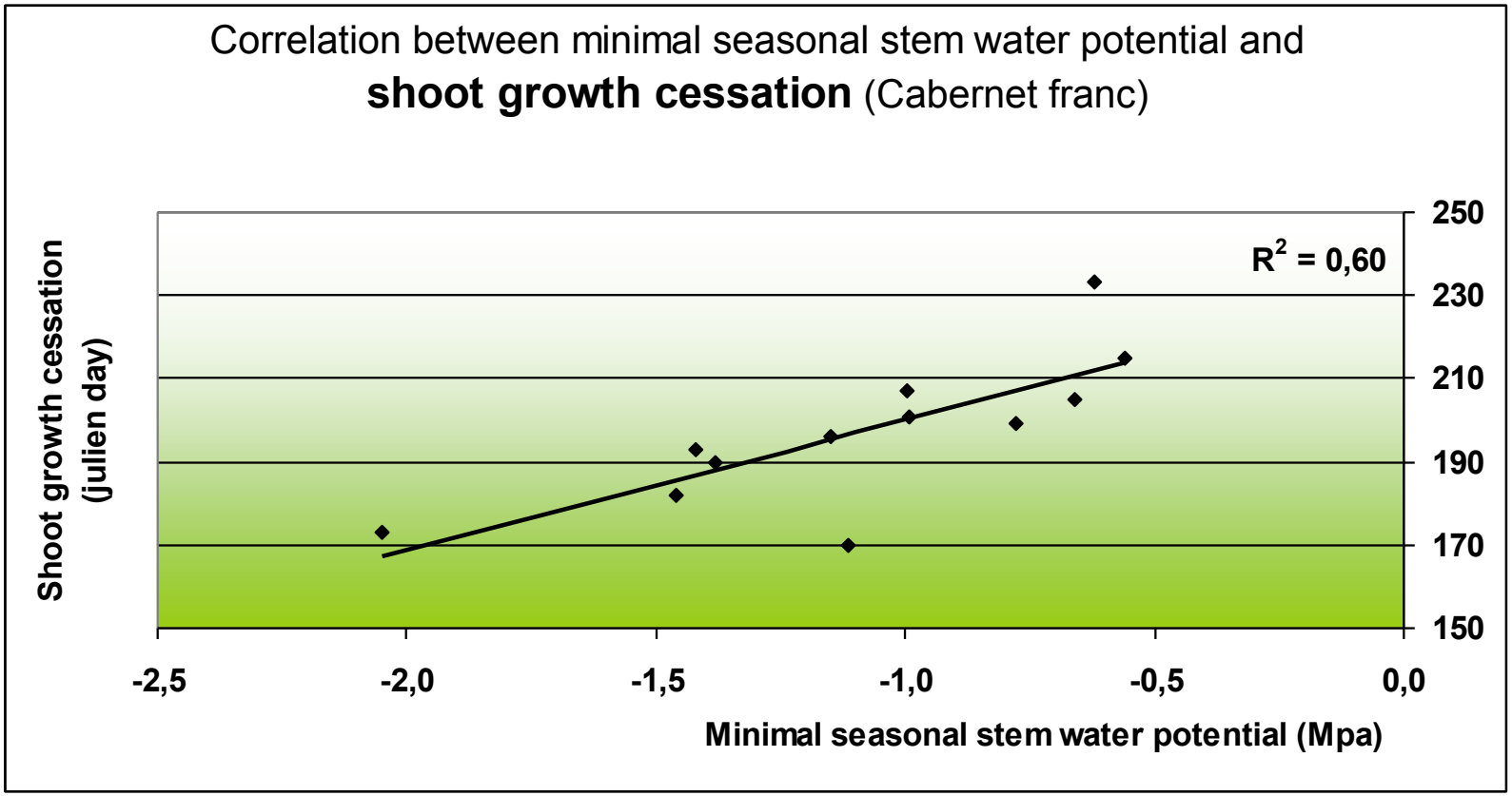
Data set:

- Cabernet franc grown at Cheval Blanc

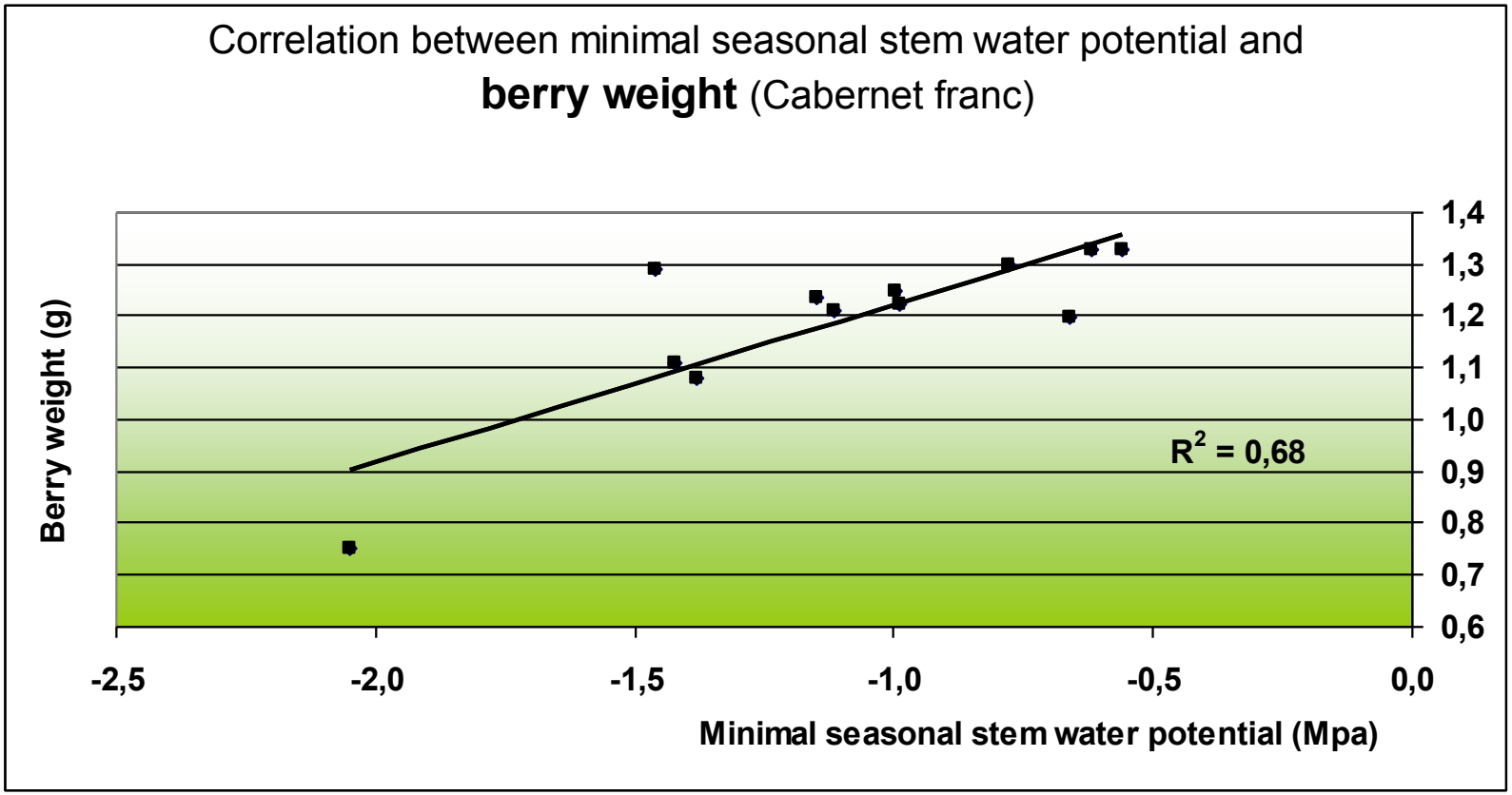
-on three soil types

-Data from 4 vintages (2004 – 2007)

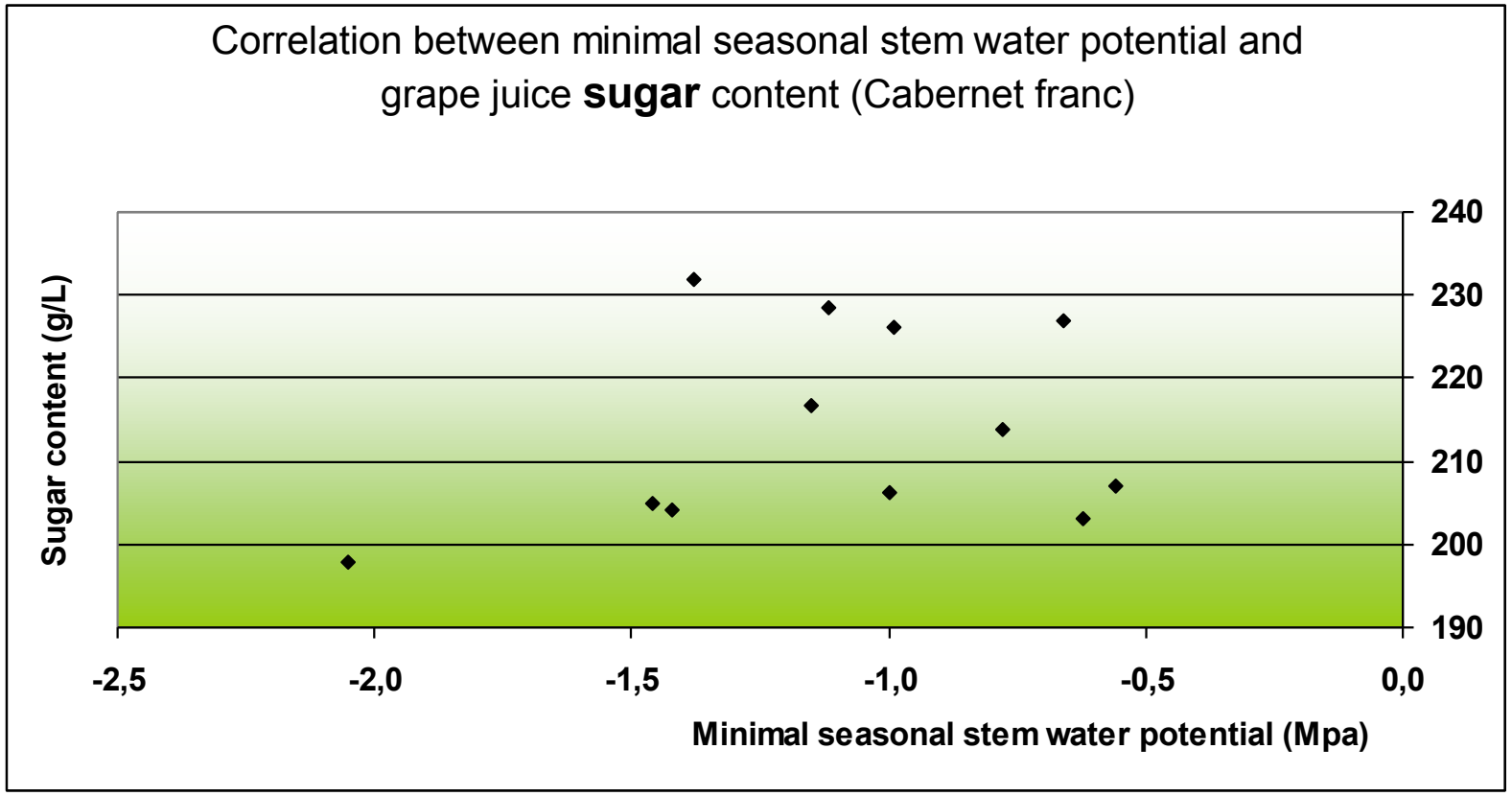
Effect on shoot growth slackening



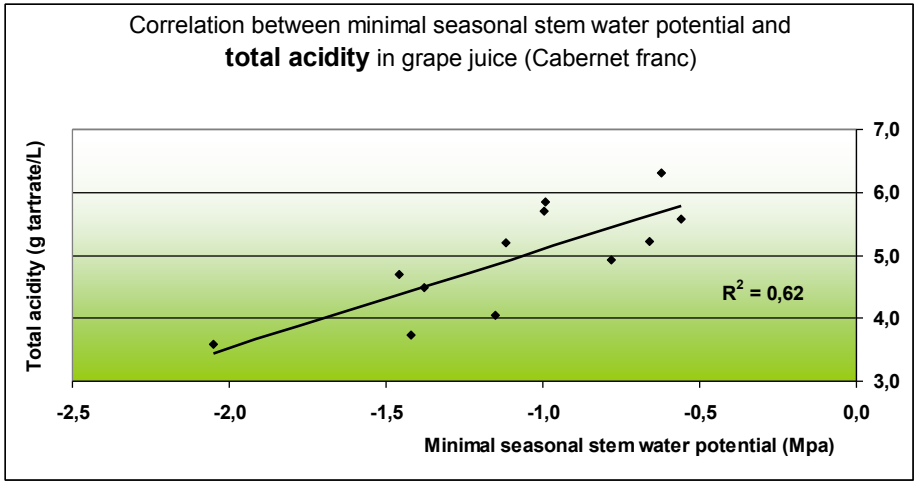
Effect on berry weight

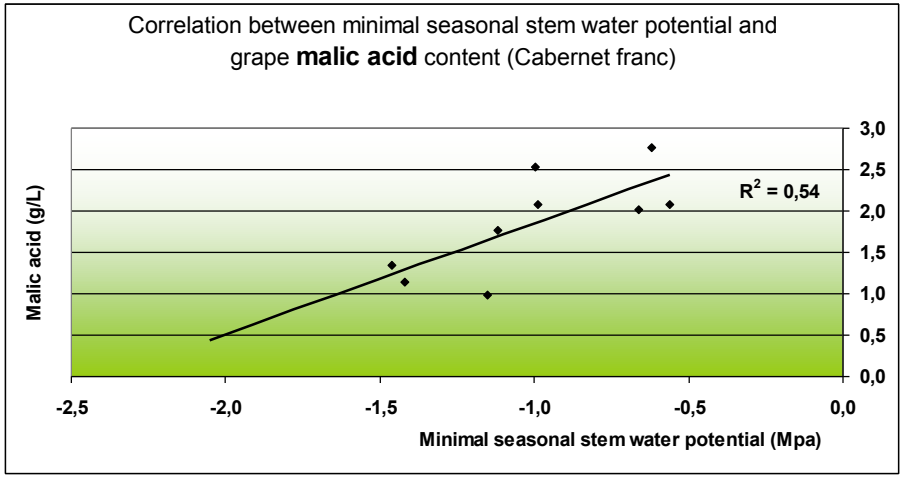


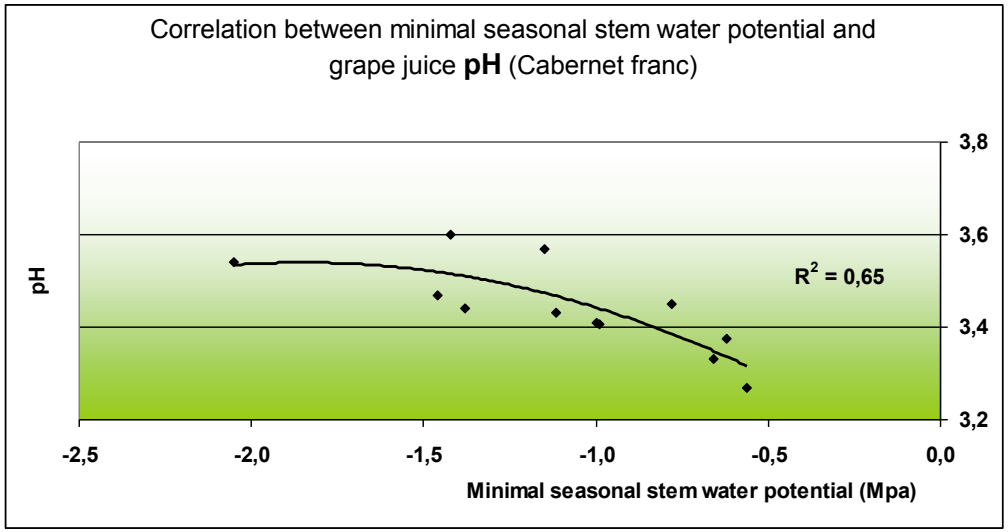
Effect on grape sugar



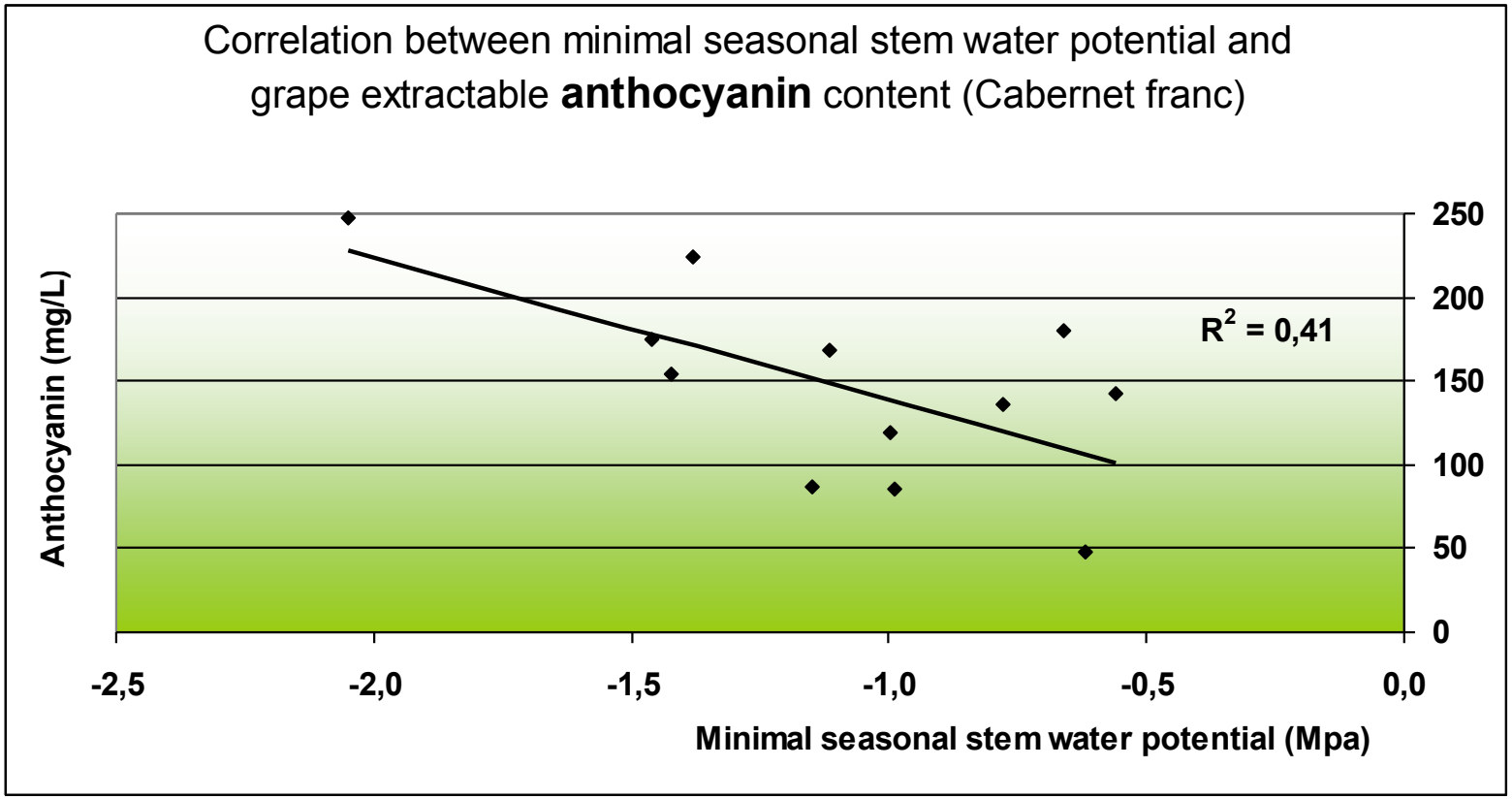
Effect on acidity







Effect on anthocyanin



Quality factors for Cabernet franc

- Limit vine vigor (use devigoration rootstocks)
- Favor grape exposure (leaf removal is essential in cool climates)
- Exposed Leaf area / fruit weight > 1.5 m^2/kg
- Good clonal material
- Environmental stress
  - Either water deficit stress
  - Or limited nitrogen
  - Or both