

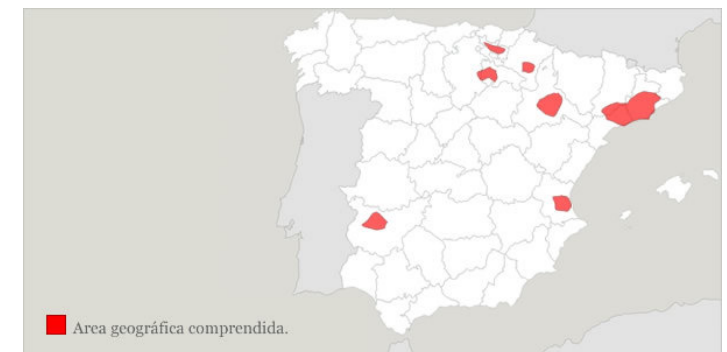
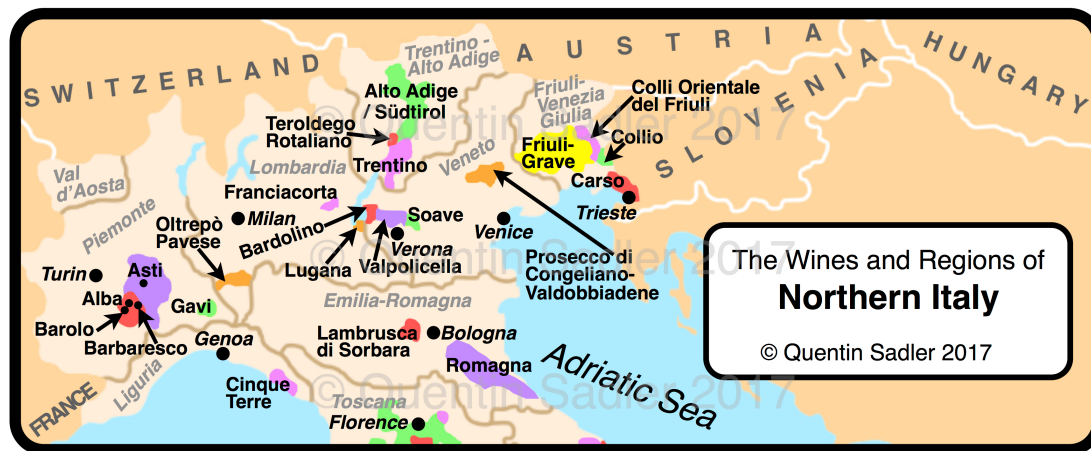
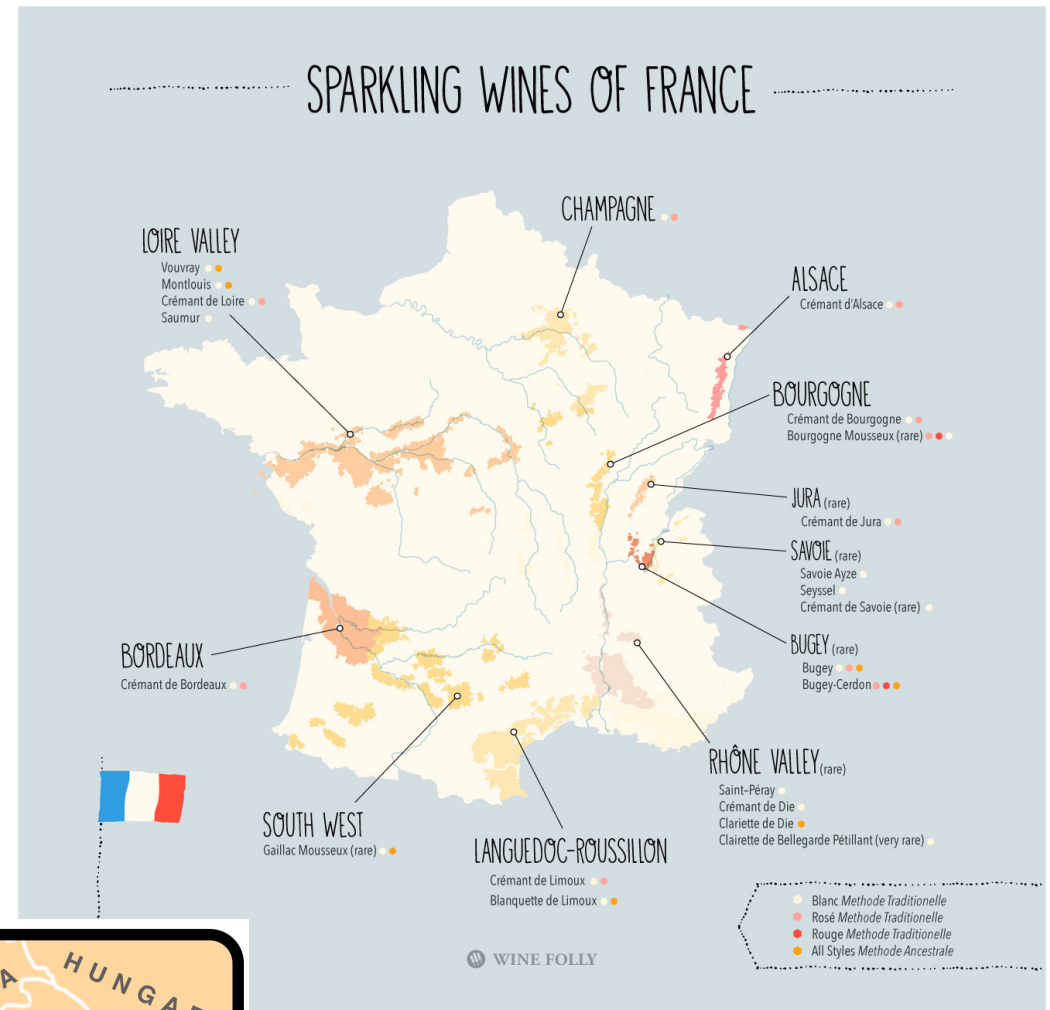
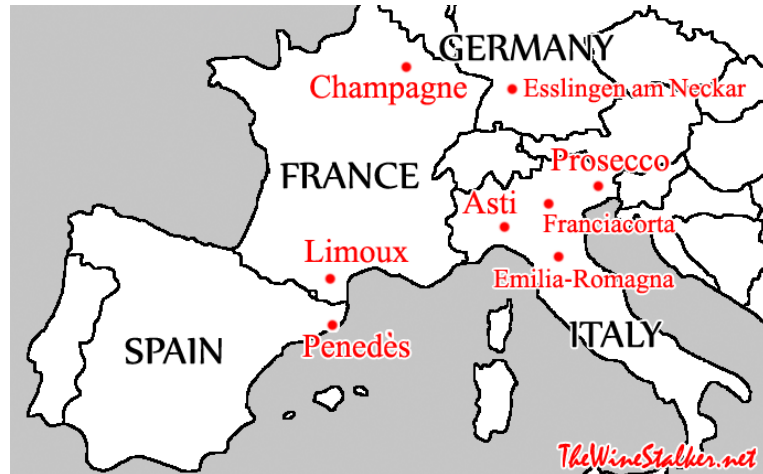


Understanding Sparkling Wines

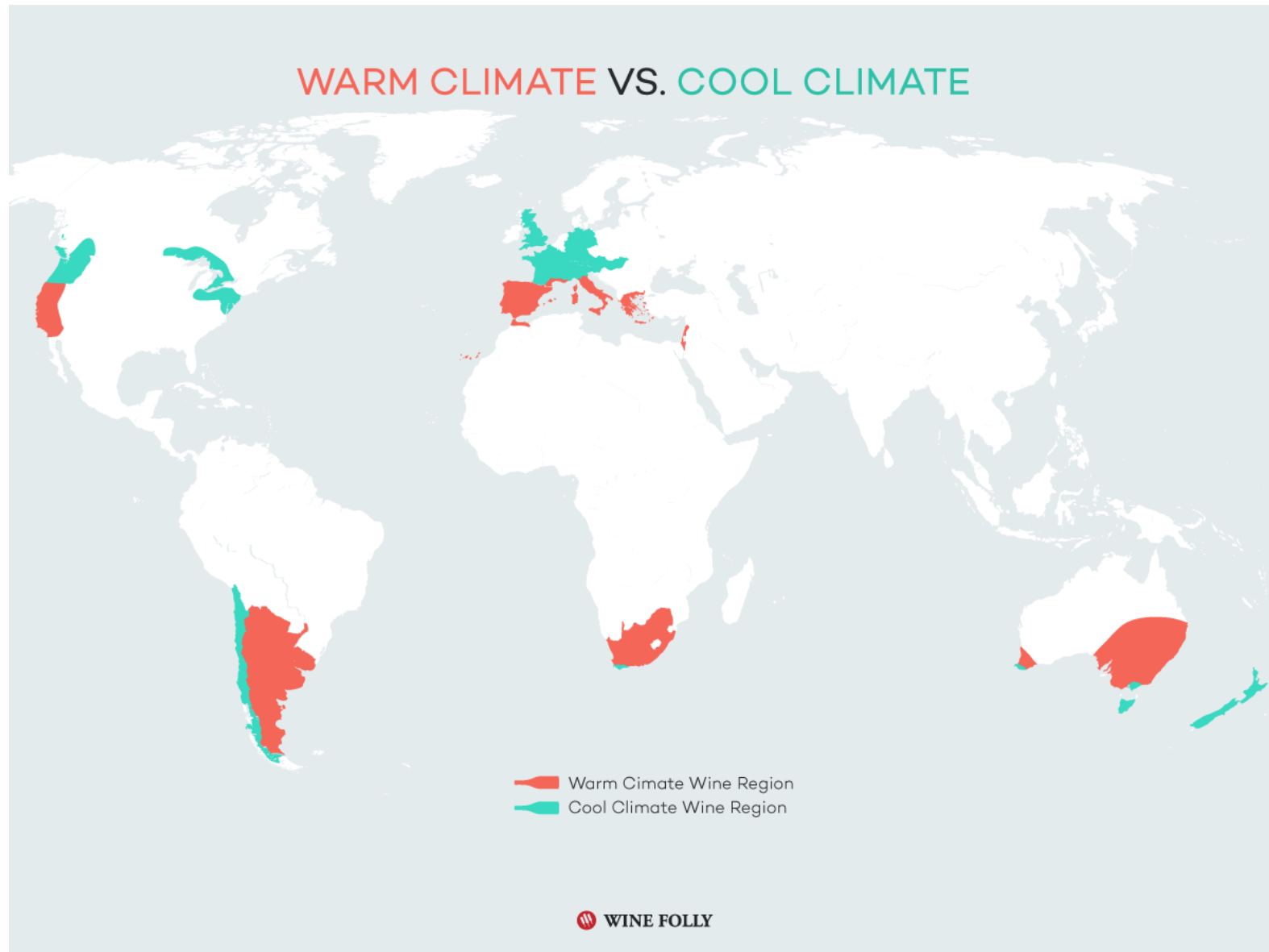
Emili Mayo DipWSET

Col·legi Enginyers Industrials – Tarragona
February 2025

Sparkling wines in Europe



Sparkling wines in the rest of the world? (cool climate zones)



CHAMPAGNE (FRA)

Traditional method

Pinot noir (38%)

Chardonnay (31%)

Pinot meunier (31%)

Other (pinot gris, pinot blanc, pinot meslier, arbane)

Pinot Noir Chardonnay Meunier



CAVA / CORPINAT (95% Penedès - ESP)

Traditional method

Macabeu (35%)

Xarel·lo (25%)

Parellada (20%)

Other (chardonnay 9%, trepat, malvasia, pinot noir, garnatxa, monastrell)

Parellada Macabeu Xarel·lo

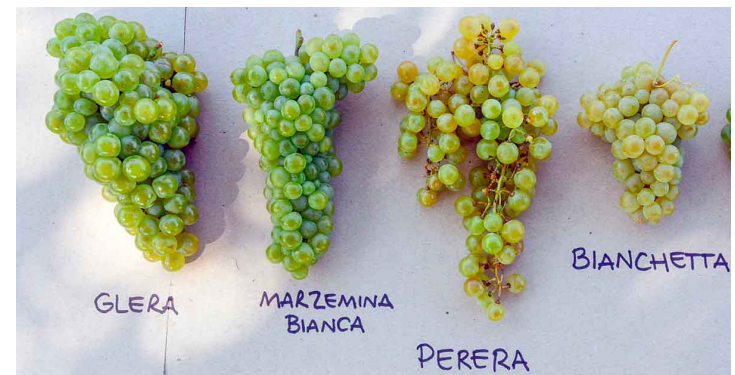


PROSECCO (Veneto - ITA)

Tank method

Glera (+85%)

Other (verdiso, bianchetta, marzemina bianca, perera, pinot noir)



Why are there bubbles in sparkling wine?



Alcoholic Fermentation (FAL)
(17 gr. sugar → 1% abv)

Which methods can be used to keep bubbles in the wine?

One FAL (ancestral)

*Part in 'vat' + part in bottle
Keep part of CO₂*



Two FAL (traditional / tank)

*1 in vat (base wine) + 1 in bottle / in tank
Keep all CO₂ from 2nd FAL*



Three main methods to obtain BUBBLES

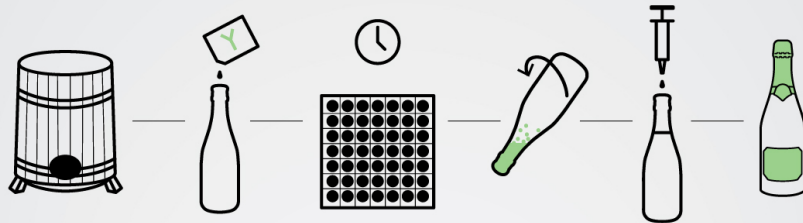
Base Wine + 2nd FAL:

- in bottle (traditional method)
- in stainless steel vats (tank method)

Only one FAL (1/2 in bottle):

- ancestral method (original)

Traditional Method SPARKLING WINE PRODUCTION



CUVÉE

After wines complete the first fermentation, the winemaker creates a blend or "cuvée" with a selection of base wines.

TIRAGE

Wines are bottled blended with a small mixture of yeast and sugar/must to initiate the 2nd fermentation. This mixture is called the Liqueur de Tirage.

AGING

Wines age for a period of time on the lees (dead yeast particles). Aging lasts from about 9 months to about 5 years (depending on quality level).

RIDDLING / DISGORGING

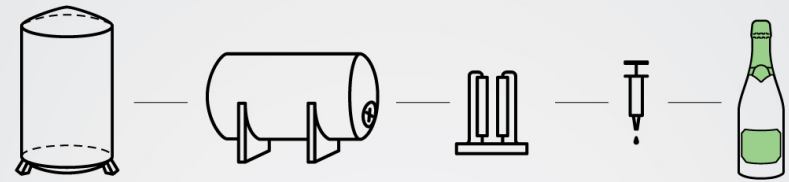
Bottles are rotated so that lees descend to the neck of the bottle. Then the bottle necks are placed in a frozen bath and opened such that the frozen block of lees pops out.

DOSAGE

Some wine and sugar/must (called residual sugar-RS) is added back to the bottle. This mixture is also called Liqueur d'Expedition

BRUT NATURE 0-3 g/L RS
EXTRA BRUT 0-6 g/L RS
BRUT 0-12 g/L RS
EXTRA DRY 12-17 g/L RS
DRY 17-32 g/L RS
DEMI SEC 32-50 g/L RS
DOUX 50+ g/L RS

Tank Method (aka Charmat) SPARKLING WINE PRODUCTION



BASE WINE + SUGAR + YEAST

A mixture of yeast and sugar is added to the base wine and the wine is transferred into an autoclave (pressure-resistant tank).

2ND FERMENTATION

Wines complete their second fermentation in a pressure-resistant tank in about 10 days.

FILTERING

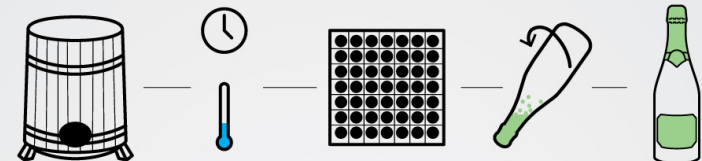
Wines are sent through a pressure-resistant filter to remove sediment.

DOSAGE

After wines are filtered and prior to bottling wines received a mixture of sugar/must.

BRUT 0-12 g/L RS
EXTRA DRY 12-17 g/L RS
DRY 17-32 g/L RS

Ancestral Method SPARKLING WINE PRODUCTION



1st FERMENTATION

Wines begin fermentation and continue to about the midway point.

FILTRATION & PAUSE

The fermentations are paused about half way through. Wines are filtered and chilled to 0 °C and held in tanks for several months.

BOTTLE FERMENTATION

Wines are then bottled where they complete the fermentation, this produces CO2 which is trapped inside the bottle.

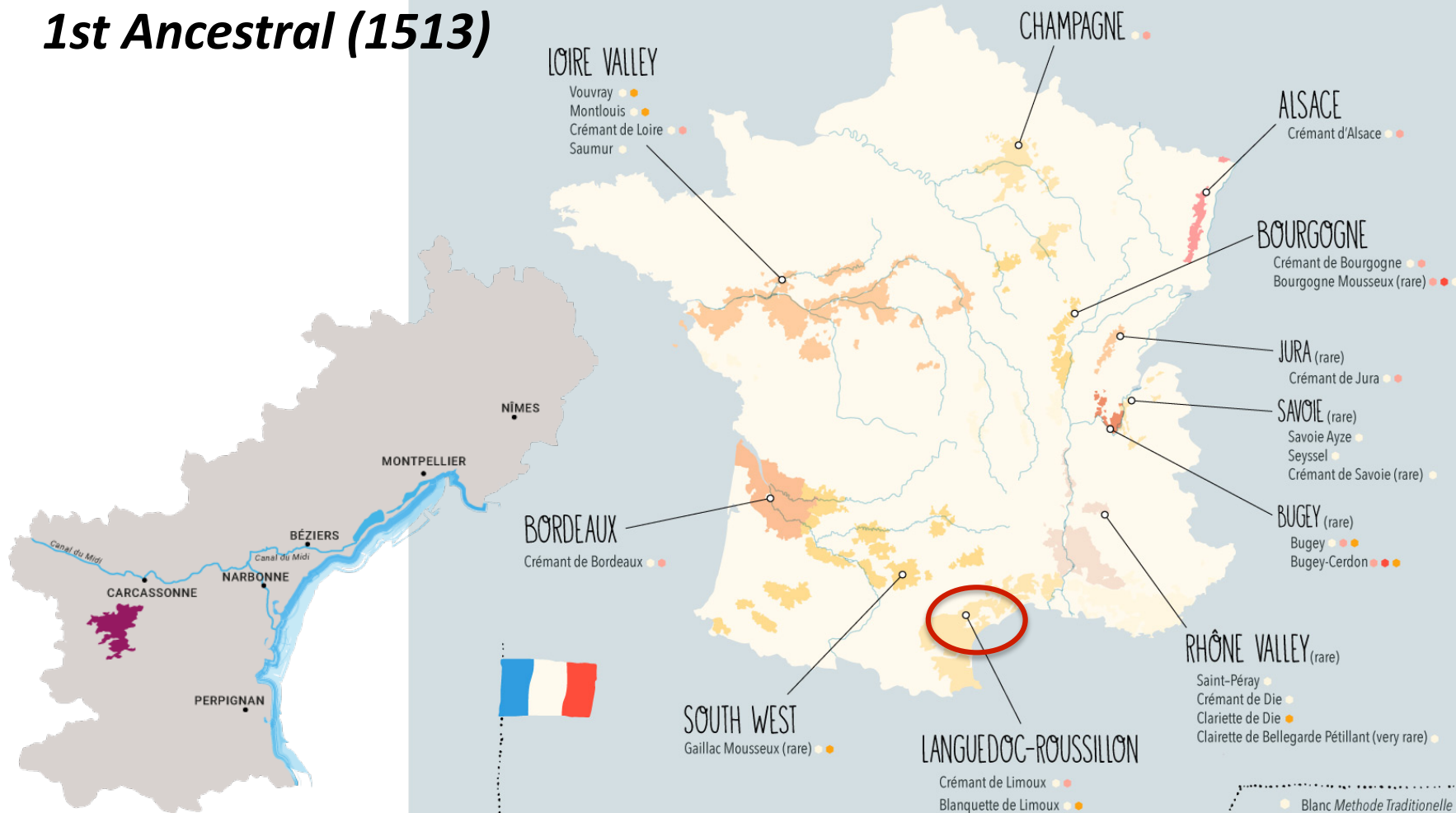
RIDDLING / DISGORGING

Bottles are riddled and disgorged without the addition of a Liqueur d'Expedition (sugar).

Myths & Reality: who is who?



***Wine with bubbles was 'discovered' in Languedoc,
Not in Champagne
Blanquette de Limoux:
1st Ancestral (1513)***





Christopher Merret

(London, 1662) Medical doctor and naturalist

Described the process of adding sugar (or molasses) to Induce a 2nd FAL



Jean Antoine Chaptal

(Paris, 1756-1832) Chemist, academic

Quantified rate sugar/alcohol in FAL (17 gr / 1% abv)



Dom Perignon (*)

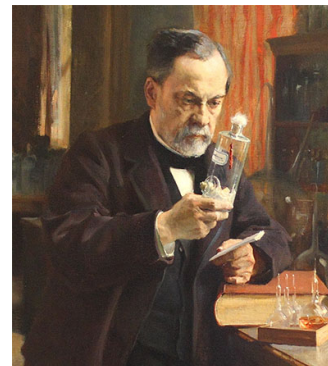
(Hautvillers, 1638-1715)

Benedictine monk

Champagne classic blend

Improvements on viticulture

Used cork stoppers



Louis Pasteur

(Lille, 1822-1895) Chemist, microbiologist

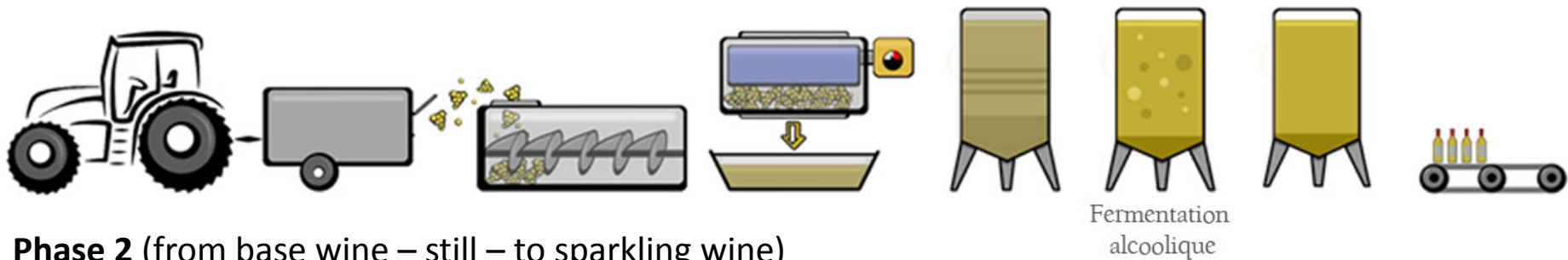
Described yeast role in fermentation process

(*) 'Come quickly brothers, I'm tasting the stars!!' published as advertisement in 1890

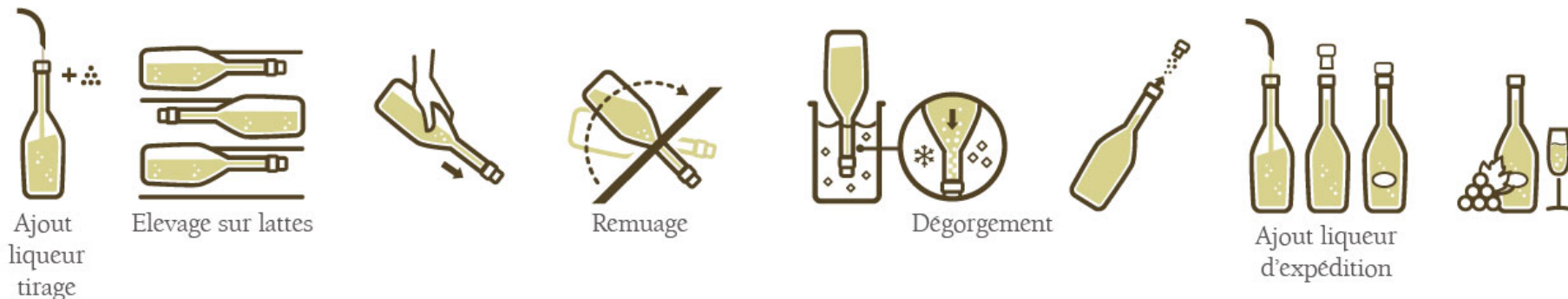
Traditional method / champenoise



Phase 1 (from grapes to base wine)



Phase 2 (from base wine – still – to sparkling wine)



(*) Method used at Champagne, Cremant, Cava, Corpinat, Franciacorta, Trento, WinzerSekt, MCC and by most quality sparkling wine producers around the world

Three types of producers



RM **Récoltant-Manipulant**

Grower Champagne
Own grapes >94%
Winemaking + ageing
Grower brand label
Small producers (vignerons)
*i.e. Jacques Selosse, André Jacquard,
Pierre Bertrand, Larmandier-Bernier*



NM **Négociant Manipulant**

Buy grapes to 3rd parties /
grapegrowers (>5%)
Winemaking + ageing
Maison brand label
i.e. Moët / Veuve Clicquot / L.Roederer ...



CM **Coopérateur-Manipulant**

Grapes grown by members
Winemaking + ageing
Coop. Brand label
*i.e. Nicolas Feuillate, Beaumont
des Crayères ...*

ND Négociant-Distributeur / **MA** Marque d'Acheteur

Traditional method: base wines and blending



Base wine:

- manual harvest, gentle pressing (*)
- dry, neutral flavour, sense bombolles
- high acidity, moderate alcohol 10,5%-11%
- some undergo MFL (cool climate)

Blending:

- grape varieties (%)
- villages, areas, plots of land
- reserve wines

Obj. Mantain house style, add complexity, manage volume, smooth vintage variations

(*) A Champagne, un marc: 4.000 kg raim >> 2.050 lt cuvéé + 410 lt taille (1ers) + 205 lt taille (2ons). Total: 2.665 lt vi

***Traditional method:
tirage + 2^a FAL + ageing (horizontally stacked)***



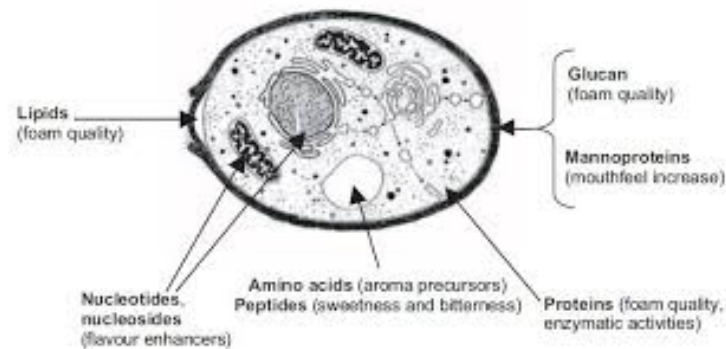
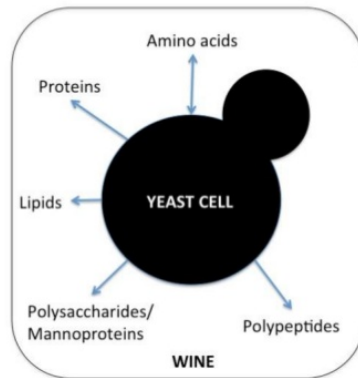
() 2^a FAL slow / 10°-15°C / 6-8 weeks / + 1,2%-2% abv / + 5-6 atm pressure*

Why do sparkling wines need some ageing?

CO₂ integration + yeast autolysis

Yeast autolysis

- A lytic and irreversible process resulting from the release of intracellular yeast enzymes
- “post-death”
- Occurs during wine aging
- lengthy process (9-12+mo)
- Results in release of cell compounds which contribute positively to sparkling wine quality

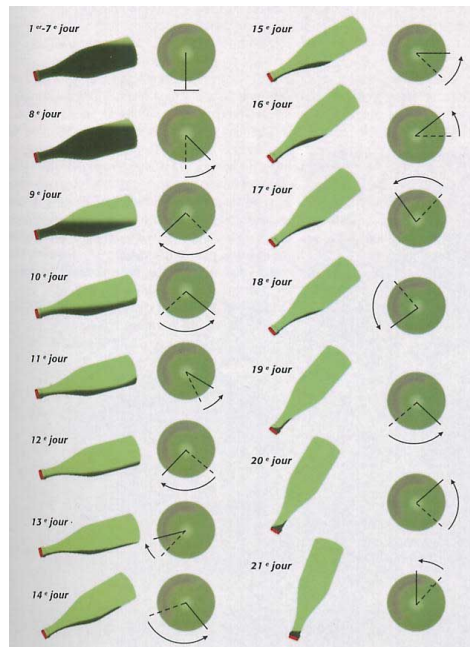
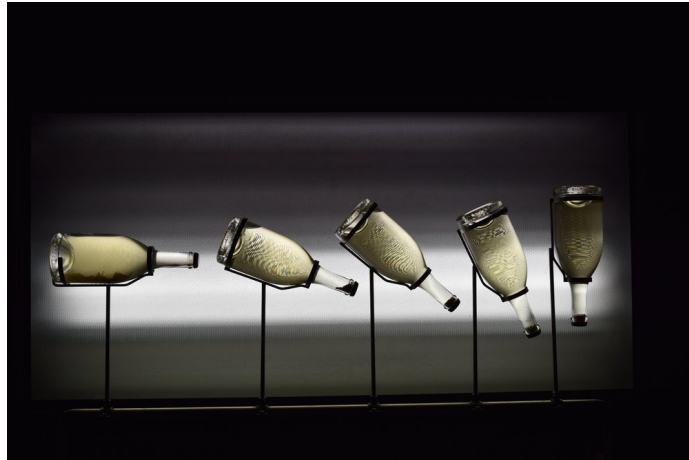


alamy stock photo

AC0EWW
www.alamy.com

() Lees: sediment from dead yeast. Provides new aroma and flavours (bread, biscuit, brioix, toast ...).
Keep the wine fresh while in contact with lees.*

Traditional method: Riddling (remuage): manual vs mechanical



() Manual (shake + twist): 5-6 weeks (around 25 turns per bottle) / Automàtic (cages 500 bottles): 1 week*

***Traditional method:
Disgorgement (remove lees) + dosage + corking***



Dosage / liqueur d'expédition

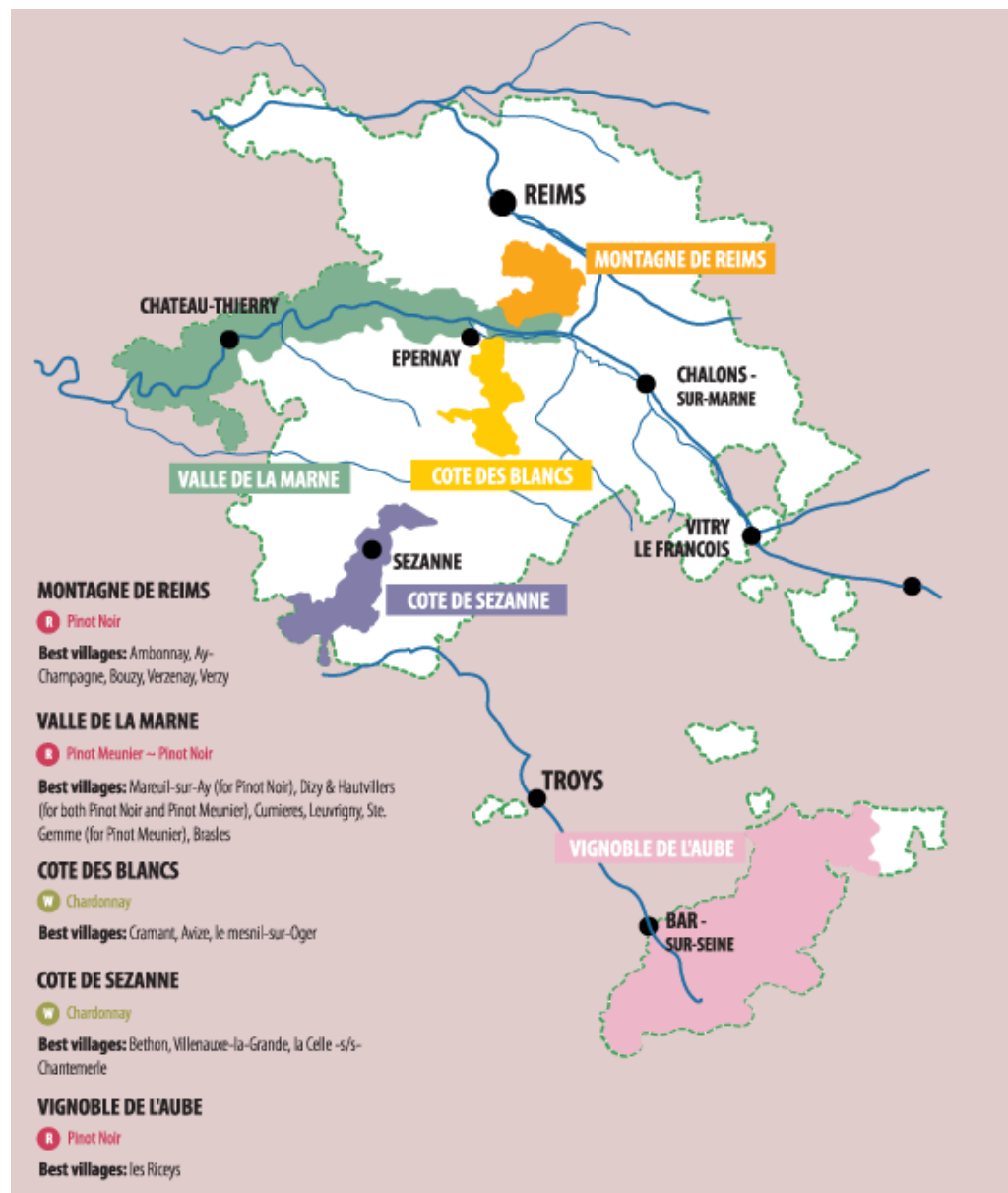


How sweet is a litre of fizz?



Which?

Champagne: territori delimitat, sub-zones i classificació de pobles

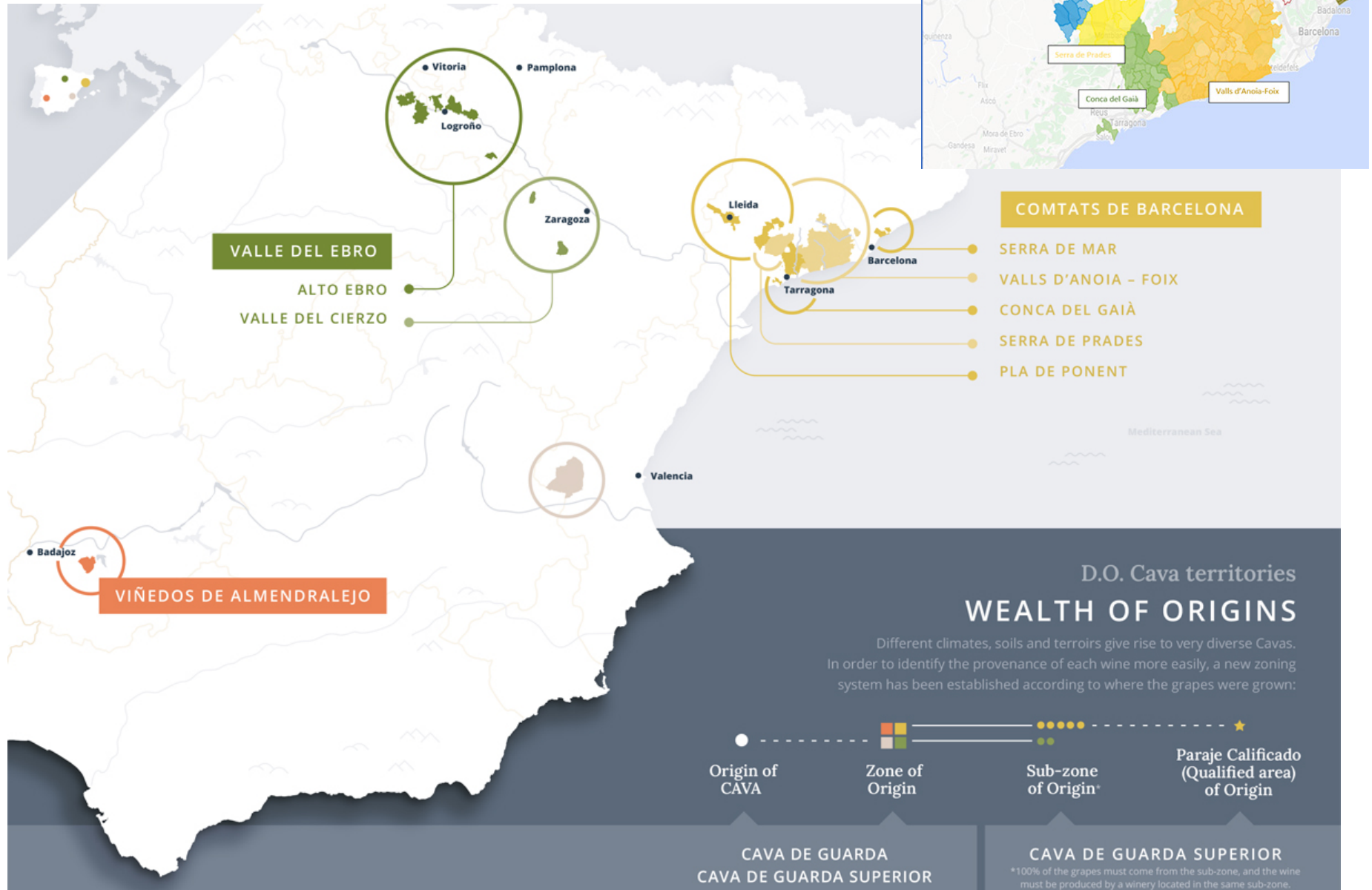


La Champagne : 319 villages de vignoble

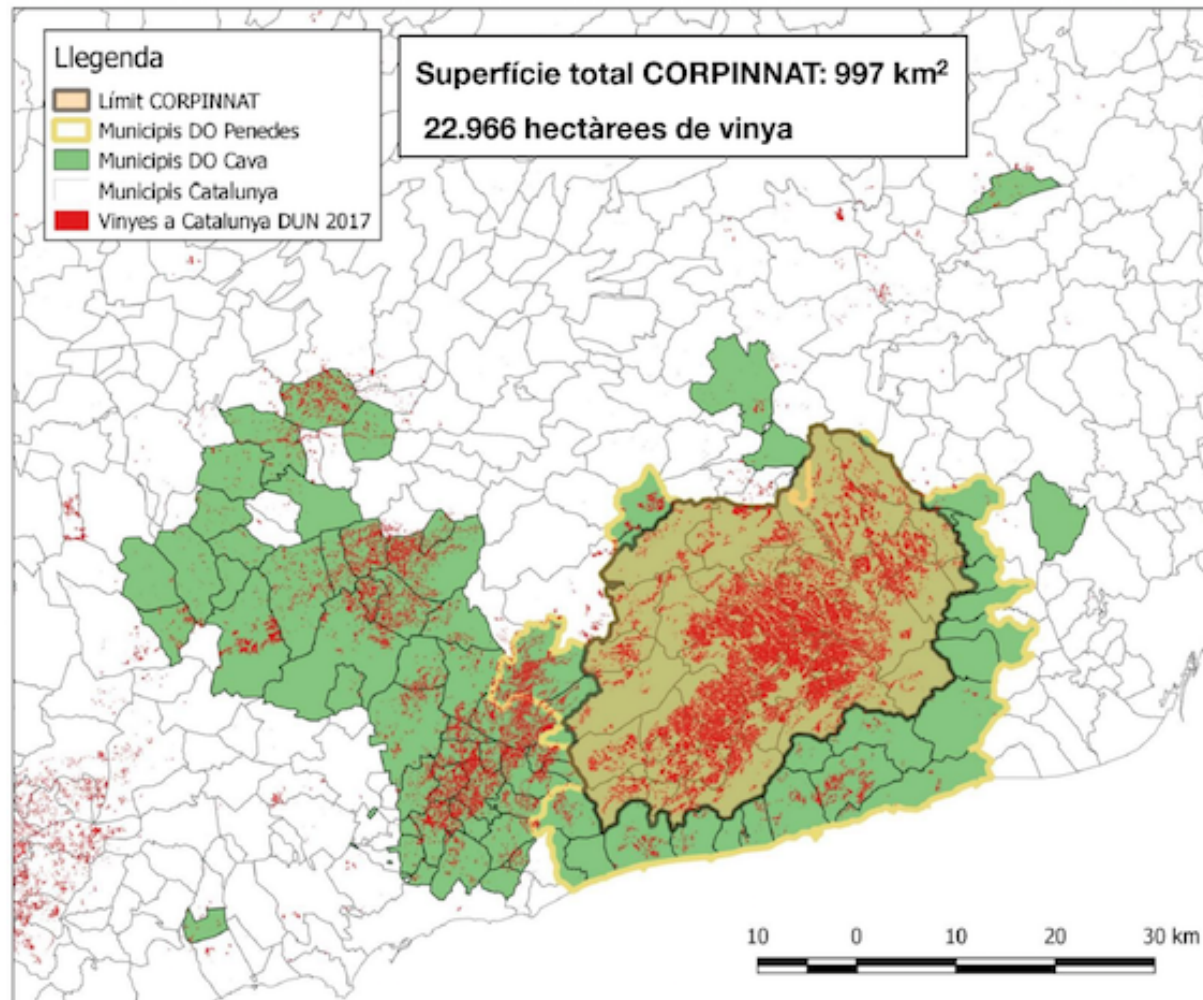


DO Cava territories (new definition)

Now it's permitted to identify zones and sub-zones



Sparkling wine from Penedès region: one territory / four different interpretations



D.O.
CAVA



CORPINNAT


RAVENTÓS i BLANC
VITICULTORS DES DE 1497
CONCA DEL RIU AÑOIA

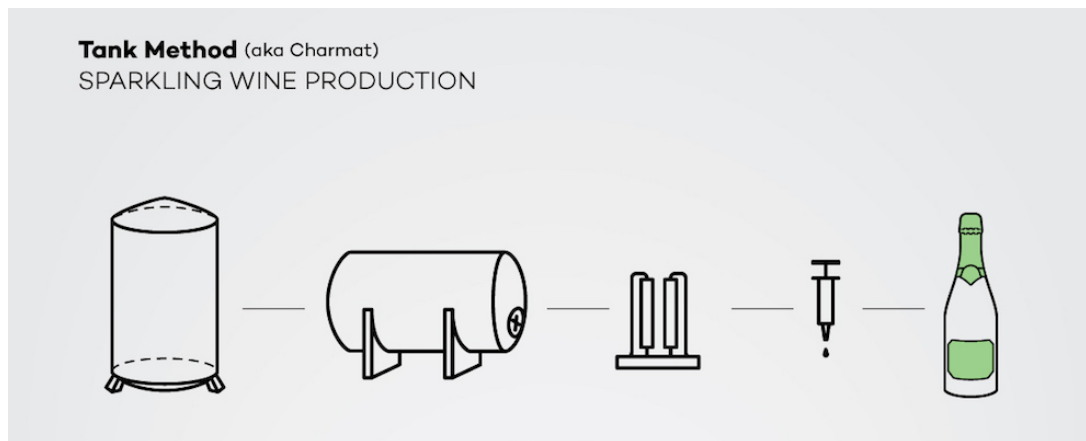
DE LA FINCA

VINYA DELS FÒSSILS

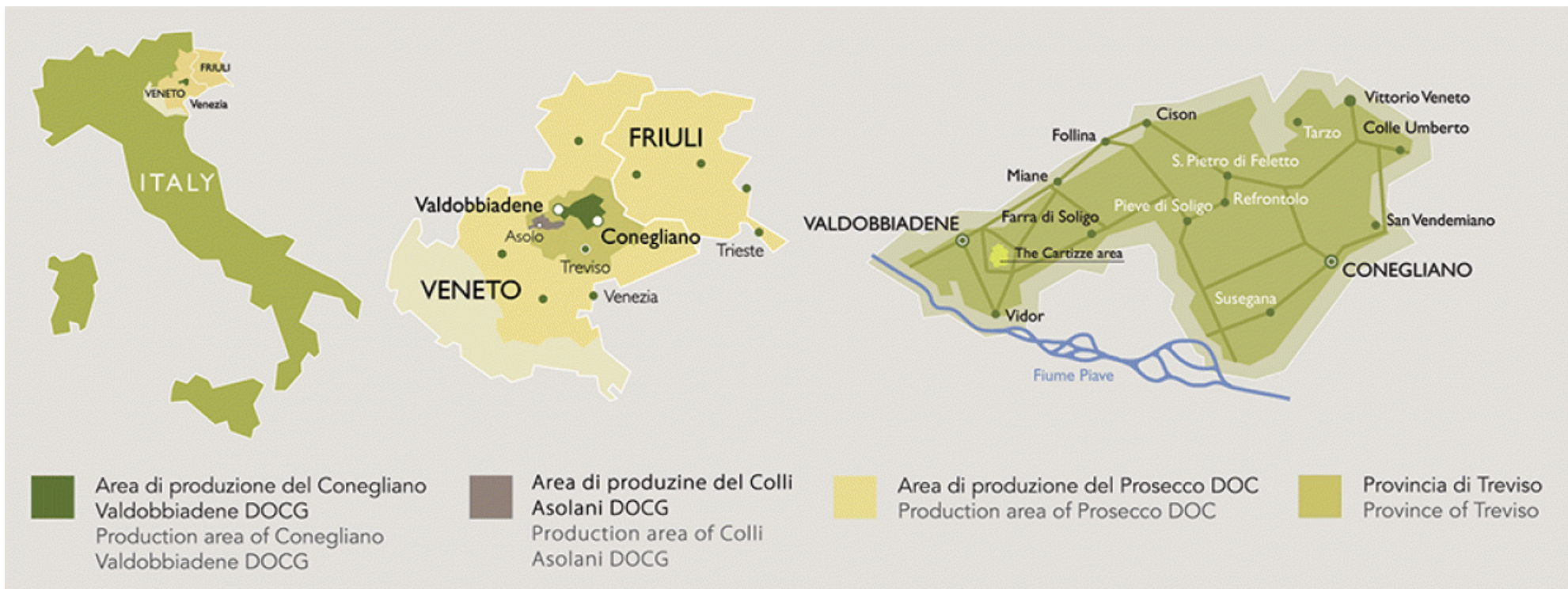


wine-searcher™

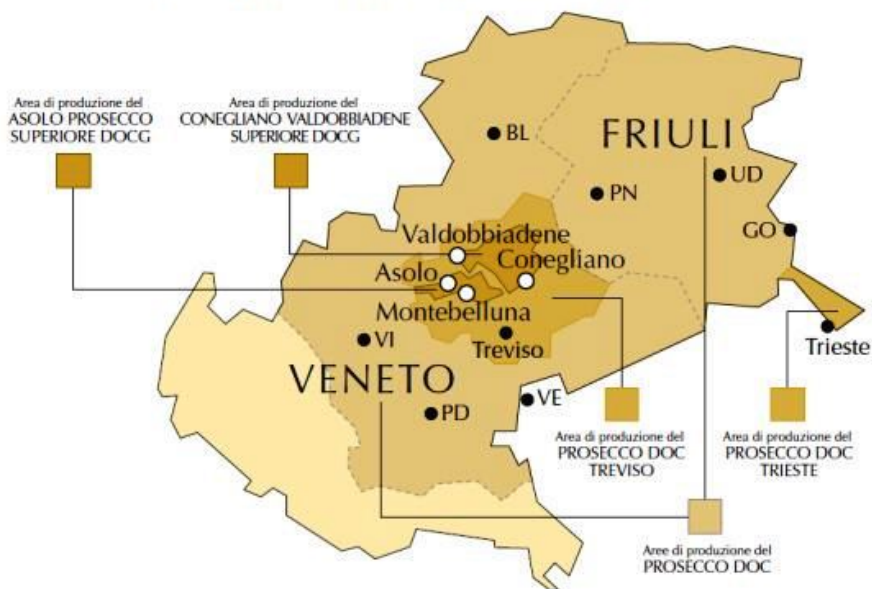
Tank Method / Charmat / Granvás / Martinotti



(*) *Periode mínim maduració de 30 dies*



I TERRITORI DEL PROSECCO



PYRAMID QUALITY

