Chapter 41
Sparkling Wine Production

Vinspiration

The Vineyard

- Grapes must be:
  - Low in sugar (second ferm adds 1.2-1.3%, so base wine is 10-11% abv).
  - High in acid (refreshing)
  - Ripe enough flavours (no herbaceous flavours)
- Only cool regions = acid high/sugar low/grapes ripen slowly
- If hot, grapes must be picked early (but flavours still herbaceous)

Handling the Grapes and Juice

- Harvest
  - Cool regions = handpicked + whole bunches
  - Hot regions = machine harvesting before acid loss/sugar accumulation (usually inexpensive)
- Pressing
  - Pressed ASAP
  - Gentle pressing - min tannin/colour extraction (esp for black grapes)
    - Whole bunches helps
  - Avoid crushing - min contact with skins + juice
  - EU laws determine:
    - Amount of pressure used
    - Amount of juice extracted

Methods of Making Sparkling Wine

Traditional Method

Wines undergo second fermentation in bottle

Process after harvesting and pressing:

1. **Make the base wine**

- First alcoholic fermentation in large stainless steel (temp controlled) - (oak vats/barrels can be used instead)
- Base wine = dry/neutral flavours/high acid
  - Can undergo MLF or oak maturation before 2nd fermentation
- Base wine usually used year after harvest (can be longer developing on blend.

2. **Blending**
- (a) Producer 'house style' = in non-vintage years, style maintained by blending different vineyards/vintages/varieties
- (b) Improve wine balance = PN brings aromas of red fruit, for example
- (c) Enhance complexity = grapes often ferment in many different parcels to give WM opportunity to blend.

3. **Second alcoholic fermentation**
- **Liquer de Tirage added** (make up of wine, yeast, sugar, yeast nutrients and a clarifying agent).
- Closed with crown cap - includes plastic cup insert
- Stacked horizontally at cool/constant temp
- CO_2 generated by yeast creates sparkle (5-6 atmospheres)

4. **Yeast autolysis**
- After 2nd fermentation is completed, dead yeast cells form sediment in the bottle. Chemical compounds released from cells = 'yeast autolysis'.
  - Flavours = biscuit/bread/toasty notes

5. **Riddling**
- Riddling = moving bottle from horizontal to inverted vertical position (to dislodge yeast sediment)
- Sediment collected in plastic cup
- Traditionally - moved by hand - bottles in A-frame called 'Pupitre' - up to 8 weeks to complete.
- Riddling mechanised = Gyropalette (cage holding 500 bottles on hydraulic arm) - matter of days to complete.

6. **Disgorgement and corking**
- Neck of bottle inserted in cold brine solution = freezing wine in neck.
- Bottles turned upright, crown cap seal removed, pressure from CO_2 ejects sediment + plastic insert.
- Fully mechanised process = matter of second/no pressure lost or oxygen allowed in.
- **Liqueur d'expedition** = wine + sugar
  - Determines final sweetness, aka, Dosage
  - No Dosage = Brut Nature or Zero Dosage (wine still added to top up)
  - Characteristic important in Dosage = sim to blending for 'house style'
- Cork = a cylinder with an area on its round face 3 x that of bottle opening = compressed considerably before inserted.
- Wire cage added for security

7. **Bottle ageing**
- Can age few months after corked (to allow Liquer d'Expedition to integrate)
- Most sparkling RTD on release
- No vintage date = difficult to tell if wine is young/mature
  - Producers now adding disgorgement dates to label

Transfer Method

- Same process as traditional method up to riddling
- **Entire content of bottle put into sealed tank under pressure**
- Wine filtered (yeast lees removed)
- Liqueur d'Expedition added
- Wine rebottled into fresh bottle
- Benefits: cheaper/large vats maintain style + quality
- Will say 'bottle-fermented' on label is transfer method used

---

Tank Method

- Based wine 2nd fermentation in stainless steel tanks. Yeast, sugar, yeast nutrients and clarifying agent added. Tank withstands CO2 pressure. Filtered prior to bottling.
- No yeast autolysis - fresh fruit characteristics maintained.

Asti Method

- Sweet, fruity sparkling - Asti region, Piemonte
- Juice is chilled/stored. When required, juice warmed + fermented in a pressurised tank. CO2 allowed to escape. Then the tank is sealed to retain CO2. Fermentation until 7% abv/ 5-6 atmospheres.
- Fermentation stopped by chilling the wine - then filtered under pressure to remove yeast.
- Immediate sale.

Carbonation

- CO2 injected into still wine - then bottled under pressure.
- Good for base flavour fruity wines, ie, SB.
- Cheapest method

Styles of Sparkling Wine

EU laws denote sweetness of label - some producers use higher of lower end of range

- Non-Vintage
  - Grapes more than one vintage
  - House style/standard offering
- Vintage
  - Champagne = all grapes same year/only declared in exceptional years
  - Other areas may have different years/not premium vintage
- Rosé
  - Blend of red and white or short maceration
  - Colour can be adjusted with Liqueur d'Expedition
- Blanc de Blancs
  - Only white grapes
- Blanc de Noirs
  - Only black grapes
- Prestige Cuvée
  - Not labeling term
  - Best wine in producer's range
    - Small in no - adds to Champagne's luxury appeal

Labelling terms

- Brut Nature/Zero Dosage = 0-3 g/L residual sugar
- Brut/Bruto/Herb = 0-12 g/L residual sugar
- Demi-sec/Halbtrocken/Medium-Dry = 32-50 g/L residual sugar

Multiple Choice Practice Questions

1) Which of the following methods is primarily used for producing high-quality sparkling wines such as Champagne?

a) Carbonation
b) Tank Method
c) Transfer Method
d) Traditional Method

2) In the Traditional Method, what is the term for the process of gradually moving the yeast sediment to the neck of the bottle?

a) Autolysis
b) Riddling
c) Disgorgement
d) Dosage

3) Which of the following is the correct order of steps in the Traditional Method of sparkling wine production?

a) First fermentation, Riddling, Dosage, Second fermentation, Disgorgement
b) First fermentation, Second fermentation, Riddling, Disgorgement, Dosage
c) Second fermentation, Riddling, Disgorgement, Dosage, First fermentation
d) First fermentation, Disgorgement, Riddling, Second fermentation, Dosage

4) Which of the following grape varieties is NOT commonly used in the production of Champagne?

a) Chardonnay
b) Pinot Noir
c) Chenin Blanc
d) Pinot Meunier

5) What is the primary purpose of the "liqueur d'expédition" added during dosage?

a) To initiate the second fermentation
b) To add sweetness and adjust the final flavour profile
c) To aid in the riddling process
d) To remove yeast sediment

6) Which term describes a sparkling wine made using the tank method (Charmat Method)?

a) Prosecco
b) Cava
c) Crémant
d) Champagne

7) During the traditional method, what is the effect of yeast autolysis on the wine?

a) It adds tannins and colour to the wine
b) It enhances the wine's fruitiness and acidity
c) It contributes bready and biscuity flavors to the wine
d) It increases the wine's alcohol content

8) Which of the following terms refers to a sparkling wine with no added sugar in the dosage?

a) Demi-Sec
b) Brut Nature
c) Extra Dry
d) Sec

9) What is the main advantage of the transfer method over the traditional method in sparkling wine production?

a) It produces higher-quality wines
b) It reduces the cost and time of production
c) It allows for higher carbonation levels
d) It eliminates the need for dosage

10) Which of the following is a characteristic feature of sparkling wines produced by the Asti Method?

a) The wine undergoes two fermentations
b) The wine is high in alcohol
c) The wine retains natural sweetness by halting fermentation early
d) The wine is aged on its lees for extended periods

Answers

1. d) Traditional Method

2. b) Riddling

3. b) First fermentation, Second fermentation, Riddling, Disgorgement, Dosage

4. c) Chenin Blanc

5. b) To add sweetness and adjust the final flavour profile

6. a) Prosecco

7. c) It contributes bready and biscuity flavors to the wine

8. b) Brut Nature

9. b) It reduces the cost and time of production

10. c) The wine retains natural sweetness by halting fermentation early