Traditional Method Sparkling Wine Equipment

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Sparkling Wine Production Conference
Wolf Mountain Vineyards in Dahlonega, GA
22 May 2019

Traditional Method Sparkling Wine

- Press
- Juice Treatment
- Fermentation
- Blending
- Bottling w/ crown
- Aging with Yeast
- Removing Yeast
- Back sweetening
- Crown or Cork + Cage

“Modern” Press

Whole Cluster Pressing w/ Large Membrane Press

Fruit is Loaded via Articulating Fork Lift

http://www.weimax.com/cal1.htm

“Traditional” Press

manual loading of whole clusters reduces phenolic extraction

https://www.champagne.fr/en/from-vine-to-wine/wine-making/champagne-pressing-centres

Whole Cluster vs. De-stemmed

Whole Cluster

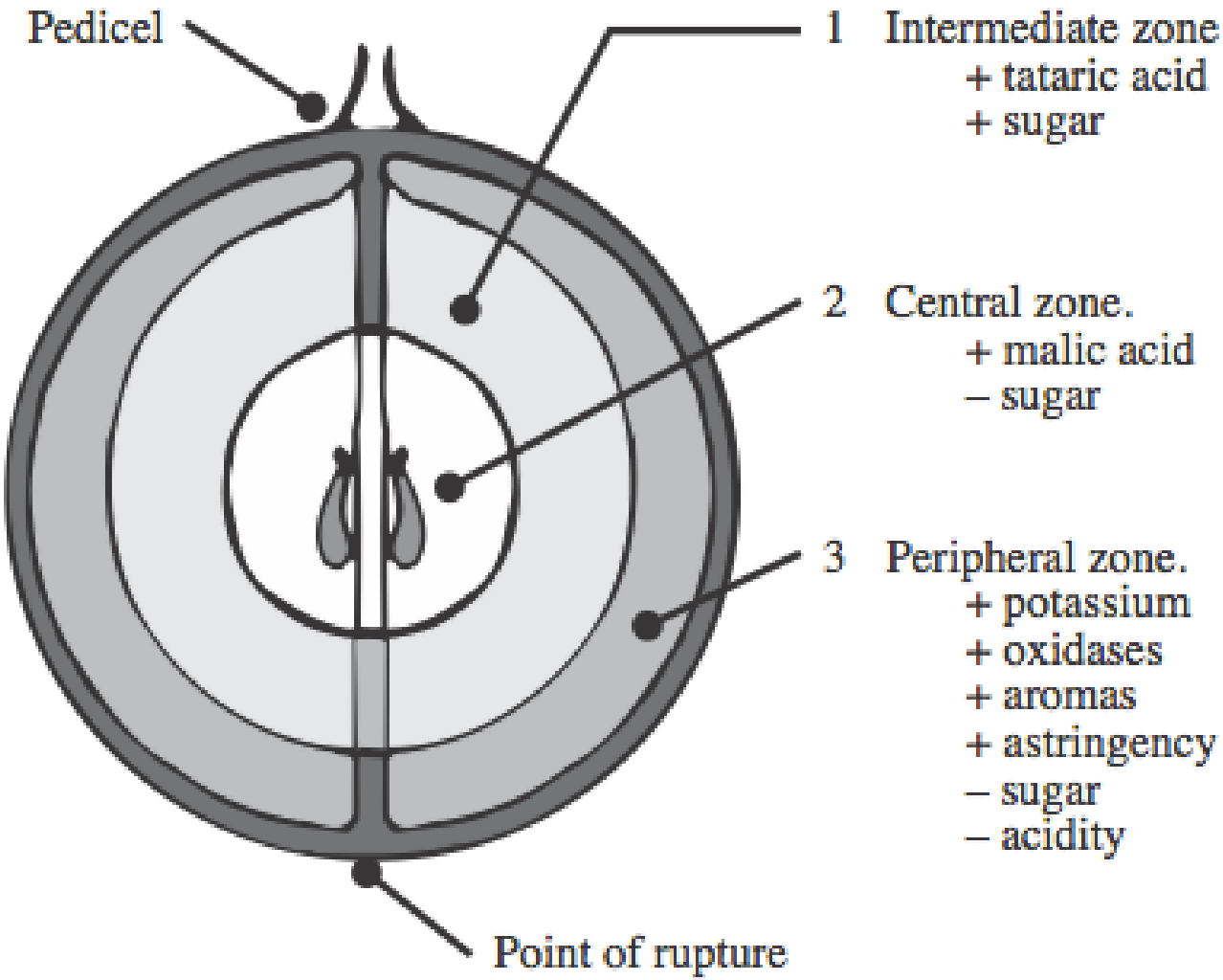
- 1.5 Tons

De-stemmed + Crushed

- 4.5 Tons

20 HL Press

Figure1. The Grape Berry



Adapted from Dunsford and Sneyd (1989).

Separating Press Fractions

- Early press fractions
  - Higher °Brix + T.A.
  - Lower pH + phenolics

    = less varietal aroma, color, tannin, bitterness
- Final press fraction
  - Blended to still wines
  - Distilled

3 Basic Press Fractions

Self pressing free run juice (1-4 Gal/Ton)

- broken/diseased berries: yeast, acetobacter, dust from the vineyard, and juice produced by self-crushing during transport & loading
- Add 70+ ppm SO2, settle separately and mix with the tailles (or discard if not good)

Cuvee (100-120 Gal/Ton)

- Press directly with no turnover or rotation
- Then 3 short press cycles w/ gradual increasing pressure from 0 to 1 bar
- Each cycle separated by one pomace turn over

Tailles (30-50 Gal/Ton)

- 4 press cycles gradually increasing pressure from 0.4 to 1.6 bars.
- Wine from tailles are more: fruity, bitter, veggie-stemmy, phenolic (less elegant)
- Often requires some stripping/fining

http://www.wineskills.co.uk/sites/default/files/reports/Sparkling%20Wine%20Production%20Report%20-%20Michel%20Salgues%20%28September%202012%29.pdf

Press Fractions

by Volume

	L/ton	Gal/ton
1. Vin de cuvée -	45	12
2. Premier cuvée -	50	13
3. Premier cuvée -	136	36
4. Deuxieme cuvée -	136	36
5. Troisieme cuvée -	91	24
6. Premiere taille -	91	24
	549	145

Water bladder presses

< 5 HL Size

- Lightly crush whole clusters directly into press
- One pass press
- 20-30 min
- Quality Yield = 100 Gal/Ton

Juice Treatment

- 0-20ppm SO_2 at press pan
- Whole cluster = less solids
- Cold settle juice and rack

- SO_2, PVPP, Bentonic/casein may be used to reduce phenolics + oxidation (especially on later pressing)

Alcoholic Fermentation & MLF

- Yeast Characteristics
  - Neutral??
  - Tolerate low pH and low temperature
  - Low H_2S and VA
- MLF (malic-> lactic)
  - Increase body
  - Lower acidity
  - Reduce color
  - Reduce fruity aroma

Blending the Base Wine

Assemblage

Blending Variables:

- Variety
- Vintage
- Press Fractions
- Oak vs. SS
- Sur lie vs. Clean Racked
- MLF or Not

Bottle Fermentation

Base Wine + Sugar + Yeast Culture --> Bottle w/ cap


+


+

-->

+


Alc %vol.	Sugar (grams/litre) to obtain:		
	5.0 bar	5.5 bar	6.0 bar
9	19	21	23
10	20	22	24 **
11	21	23	25 **
12	22	24	26

1bar = 0.862 vol.
1 vol. = 1.159 bar

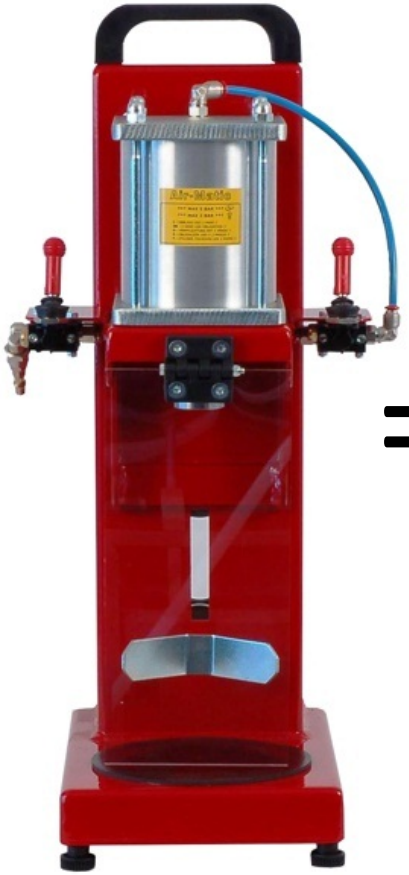
Beer = 2-4 vol.
Champagne = 4-6 vol.

http://www.winegrowers.info/wine_making/Winemaking/Making%20Quality%20Sparkling%20Wine.htm

Bottling (wine+yeast+sugar)

200-500 bottles/hour

+



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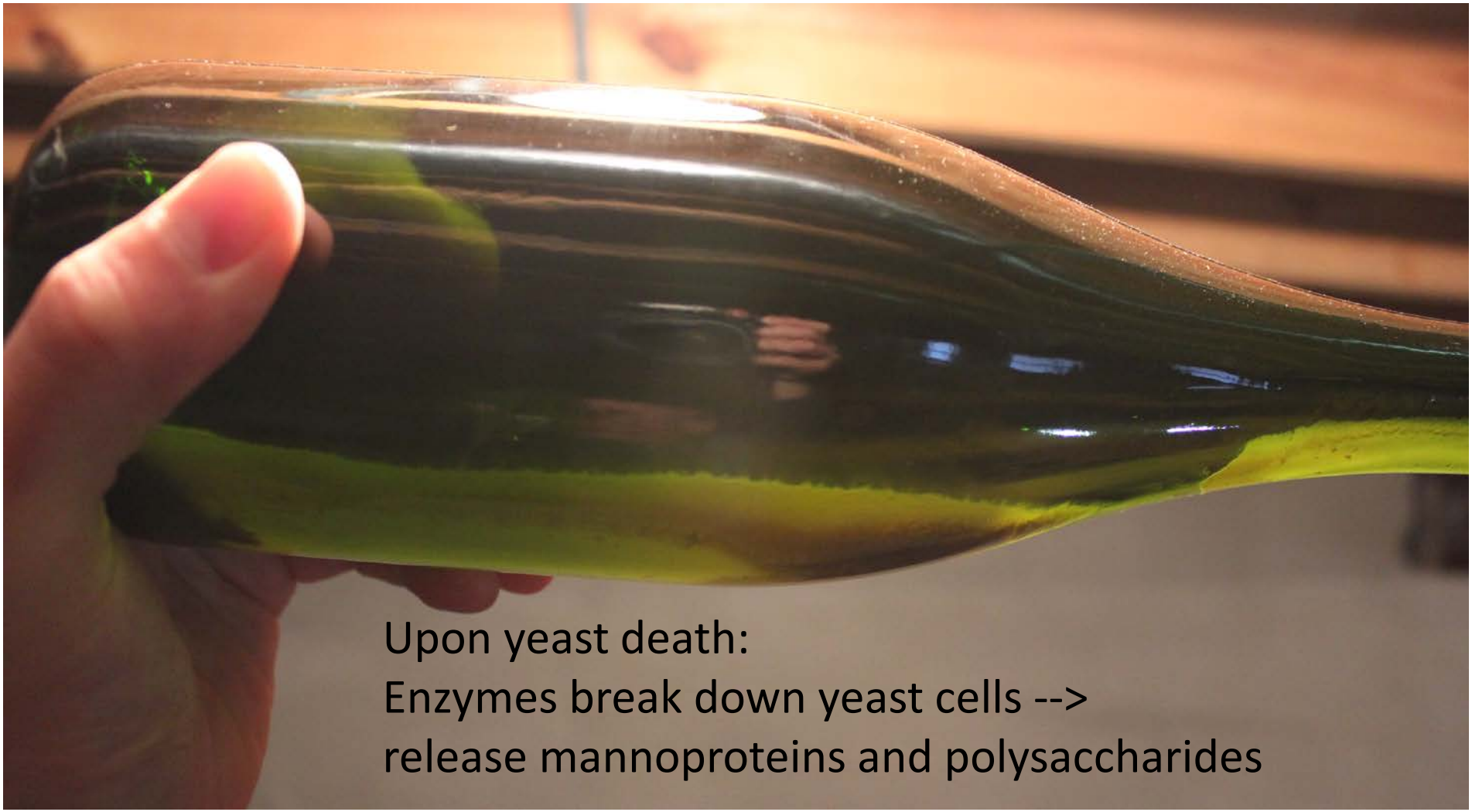
Bottle Aging with Yeast



Benefits of Bottle Aging w/ Yeast

- Creamy mouthfeel, reduced acidity + softened astringency
- Aroma Complexity --> yeasty, bread-like, biscuity, caramelized
- Inhibition of oxidation and improved tartrate + foam stability

- Wine profile changes in as little as 3 months
- Minimum aging =
  - 18 month non-vintage
  - 3 years vintage Champagne

Bottle Aging with Yeast

Manual Riddling

120 Bottles - 28 day cycle
$800

RIDDLING SCHEDULE

STAGE ONE: "Horizontal"

1 Week of Rest

STAGE TWO: 6 Days "Rocking"

1 2 — Day One
3 4 — Day Two
5 6 — Day Three
7 8 — Day Four
9 10 — Day Five
11 12 — Day Six

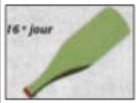
STAGE THREE: 3 Days "Rocking" FIRST WIND UP

13 14 — Day Seven
15 16 — Day Eight
17 18 — Day Nine

STAGE FOUR: 3 Days "Rocking" SECOND WIND UP

19 20 — Day Ten
21 22 — Day Eleven
23 24 — Day Twelve

STAGE FIVE: 4 Days "Rocking" THIRD WIND UP



25 26 — Day Thirteen
27 28 — Day Fourteen
29 30 — Day Fifteen
31 32 — Day Sixteen

STAGE SIX: 6.5 Days "Full Circle" BOTTLE BLOCKED

33 34 — Day Seventeen
35 36 — Day Eighteen
37 38 — Day Nineteen
39 40 — Day Twenty
41 42 — DayTwenty One
43 44 — Day Twenty Two
45 — Day Twenty Three

Manual Riddling Cycle
(3-4 weeks)

VS

Automated Riddling Cycle
(1 week)

Manual Removal of Yeast

Neck Freezing

Propylene Glycol

<u>100 Bottles/hour</u>
Total Cost = $400

30% Glycol / 70% Water

Approx. 5-6 minutes to freeze

Removing Yeast by hand

Disgorgement

Back Sweetening

Dosage

"Topping Up"

+

Liqueur d'expedition

+

Bottle capper

Back Sweetening

Dosage

**Liqueur d'expedition

Often Contains:

- Sugar
- Acid
- Brandy
- Water
- Wine
- SO_2

volume = 0-50ml

** Added to Balance - Acidity/Mouthfeel/Aroma

“Topping Up”

Often Contains:

- Young Wine
  - Freshness
  - Varietal Aroma
- Old Wine
  - Oak
  - Caramelized notes
  - Sur lie
- Same Wine

Reserve wine

volume = 0-50ml

Back Sweetening

Dosage

Sweetness Classification

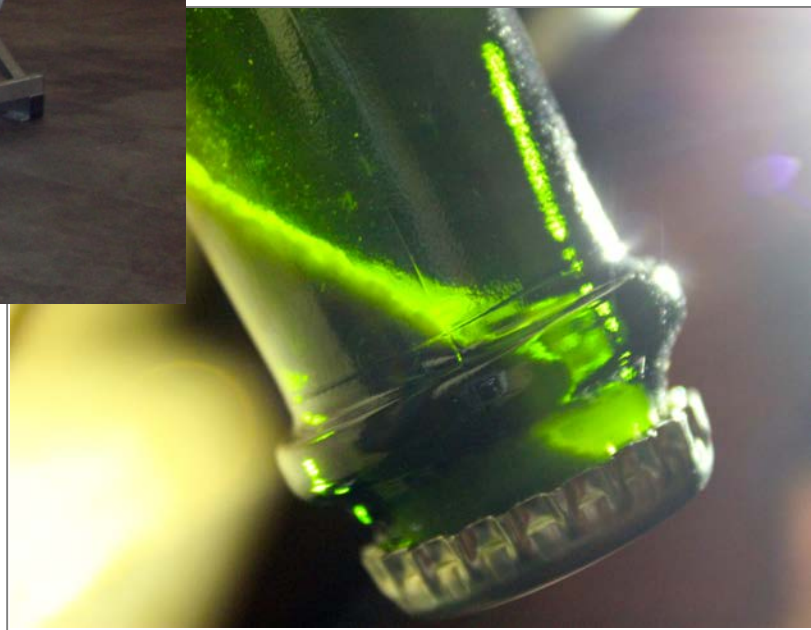
BRUT NATURE	EXTRA BRUT	BRUT
BONE DRY	BONE DRY	DRY
0-3 g/L	0-6 g/L	0-12 g/L

EXTRA DRY	DRY
FRUITY	OFF-DRY
12-17 g/L	17-32 g/L

DEMI SEC	DOUX
SWEET	SWEET
32-50 g/L	50+ g/L

Automated Riddling

Requires Addition of a Riddling Aide



1,000 Bottles - 7 day cycle
$19,000

Semi-automated Neck Freezer

Semi-automatic

500 Bottles/hour
Total Cost = $12,000

Semi-automatic vs. Semi-manual

Disgorging + Dosage + Topping Up

500 bottles/hour

$30,000

150 bottles/hour

$8,000

Bottle Finish

Cork vs. Crown Cap

Pneumatic Corker/Cager

$25,000

Manual Corker/Cager

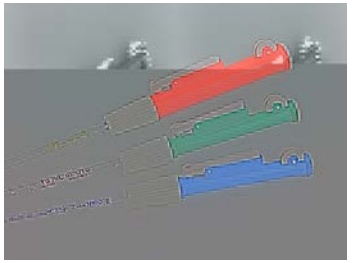
$4,000

Bottle capper

$200

$0-$400

$Free



$200

$100

$9/case

$Free

$Free

$200

Max Annual Production = 1,000 Gal

100 Bottle / Hour Output
= $1,000

$800 x 4

$100

$200

$100

$19/case

$200

$40

$300

Max Annual Production = 1,000 Gal

100 Bottle / Hour Output
= $5,000

$800 x 10

$4,000

$8,000

$19/case

$1,000

$200 x 10

$300

$200

Max Annual Production = 2,500 Gal

200 Bottle / Hour Output
= $25,000

$200 x 20

$12,000

$30,000

$25,000

$1,000

$19/case

$19,000

Max Annual Production = 10,000 Gal

500 Bottle / Hour Output
= $100,000

Risk vs. Reward of Bubbles

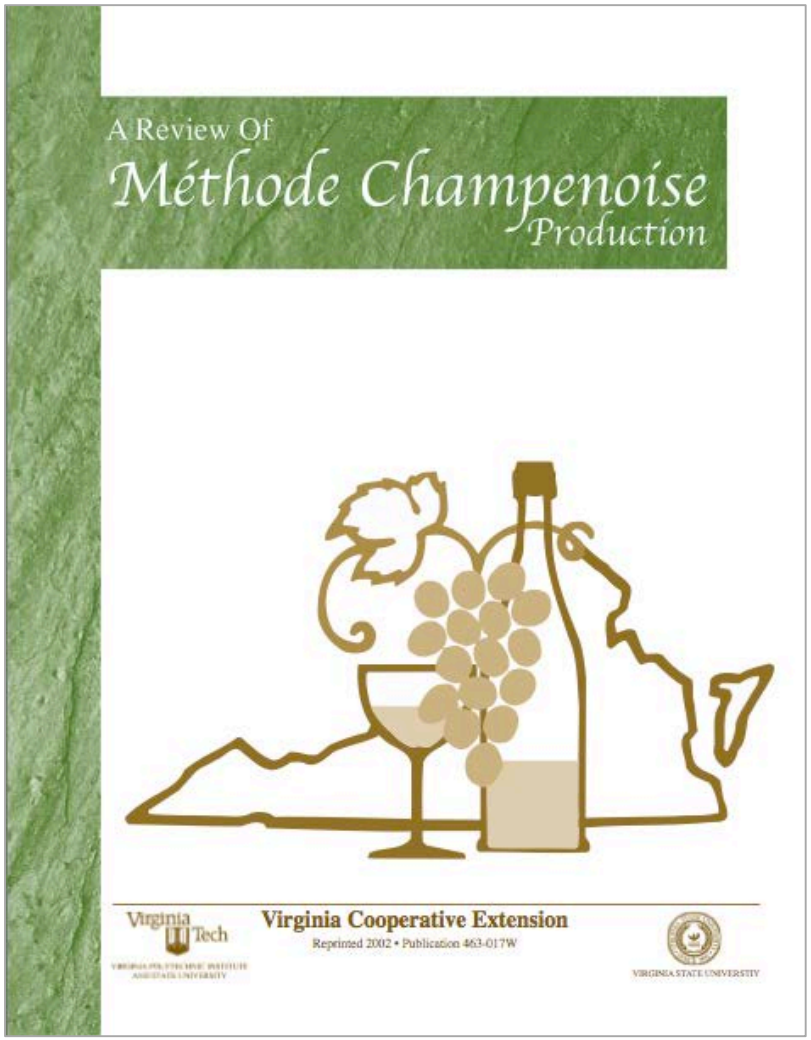
Upside

- Vineyard Profitability
- Higher Bottle Price
- Product Diversification
- The Champagne Process is Highly Marketable
- Bubbles are More Fun

Downside

- Specialized Equipment
- Higher Packaging Cost
- Longer Aging Process
- Higher Labor Cost to Produce Wine
- Bubbles Expose Flaws

Reading Material and Places to Visit

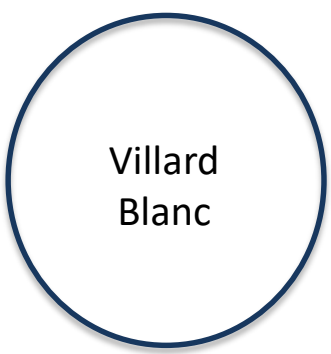


Mawby - Traverse City MI

Illinois Sparkling Co. - Utica

Sparkling Wine Tasting

KFVC Wine Short Course – January 7, 2019



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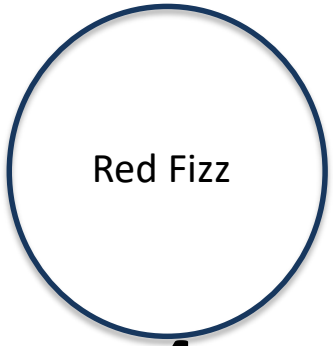

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