



**CRAFTING
CIDER'S
FUTURE
TOGETHER**

Doing More With Lees

Ryan Monkman



Visit us at booth 628/630 in the Trade Show

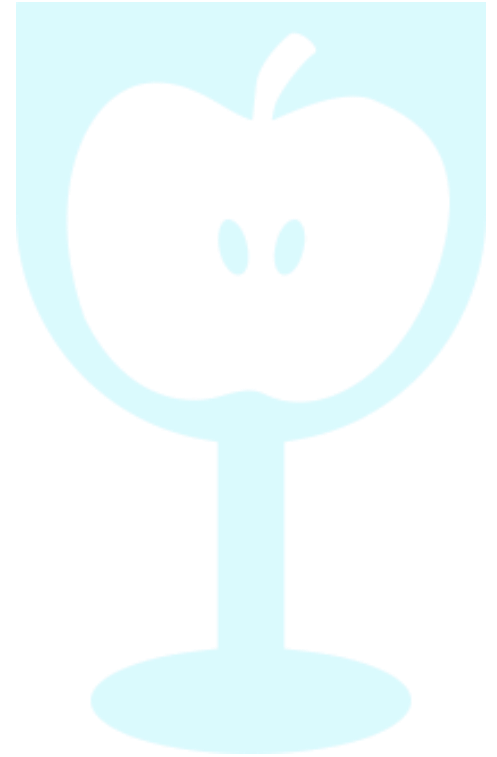
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Agenda

- Introduction and worldbuilding
- Getting your hands on some lees
- Cidermaking stages
- Three ciders

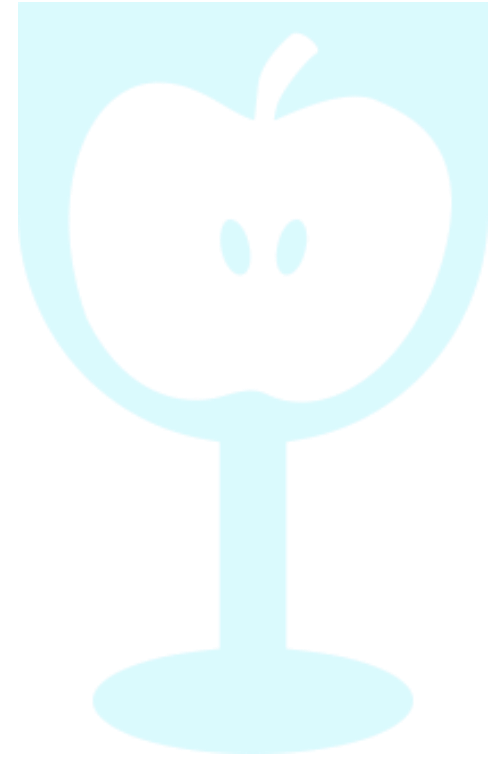


Introduction



Ryan Monkman

- Production Consultant
- FieldBird Cider, PEC
- Previous session comment - not deep enough
- One-on-one follow ups
- Secret Signal



Today

- Nobody wants to hear me talk for over an hour
- Ria recording for Cider Chat
- Let's share some experiences, ask questions



Terms: Fine Lees

- Mostly what we'll talk about today
- Byproduct of fermentation
- Fresh, old, or cracked



Terms: Other Lees

- Gross lees
 - Juice stage
 - Clear, wisp, cloud, gunk
- Garbage lees



Terms

- Autolysis: self destruct, 9 months or so
- Lysis: active destruction, enzyme, heat
- Oxygen MGMT: frenemy
- Bottling: cans too



Sur lie aging
Unfiltered

Recycling lees
TRAD SPKL

Passive

Batonnage
Bottle Condition

Active

Cracking (lysis)
Fault reduction



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Getting your hands on some lees





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Buckets and Small Tanks

- Resettle
- Keep the good stuff
- For tanks, dedicated squeegee
- Fairly stable



Prepping

- Can introduce O₂
- Keep the good stuff
- Label with age/stage
- Sugar test for activity



Cracking

- Thermolysis
- Cycle freeze and thaw (or thermovinification)
- Quick decomposition
- Aromatic, nitrogen



Know when to hold'em

- Cracked for fermentation
- Fresh for culture, faults
- Old lees for mouthfeel



For purchase

- Juice detox
- Non-DAP nutrients
- Enzymes to break cell walls
- Mannoprotein



Cidermaking Stages



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Fermentation

- Gross lees (wisp, cloud, gunk)
- Lees as culture
- Cleaning juice, restarts
- Yeast are carnivores



Elevage

- Surface area
- Batonnage frequency
- Total time for autolysis
- Mouthfeel and mannoprotein



Faults

- Oxidation
- Harsh tannin
- Copper and heavy metal
- Cold Stability (if using tartaric)
- Stuck fermentation



Bottling

- Know your numbers (MLF, RS)
- Untouched, lysozyme, pasteurize
- Nutrient plan
- Vertical vs horizontal storage (closure)



Ancestral

- Consider dosing lees
- O₂ MGMT critical
- More lees should target lower pressure



Trad

- Build new culture?
- Time sur lie
- Dosage corrections
- Glass choice



What to watch for

- Oxygen MGMT, especially if increasing dose
- H₂S to Mercaptan tricks us
- Increase in nitrogen for bacteria
- Copper-Sulphide compounds rerelease



Three Ciders



Fermentation

FRESH

- Keep some cloud, reductive ferment
- Can use cracked lees for reduction and nutrient

TEXTURE

- Keep cloud, Macro OX
- Some gunk?
- SP ferment, with O2 add partway

COOL

- Inoc with fresh lees or pied de cuve
- Mix of nutrient sources



Elevage

FRESH

- Rack and harvest lees for other ciders
- Enzyme to release stuck aromatics of suspended yeast

TEXTURE

- Rack off gunk
- Check fine lees and reintroduce
- Frequent batonnage for 9+ months

COOL

- Rack
- Lees may need O₂
- Reintroduce and hold in tank



Bottling

FRESH

- Trad with new culture
- Short sur lie

TEXTURE

- Still sur lie (standing)
- Rack and reintroduce lees to ideal level
- Store unused lees

COOL

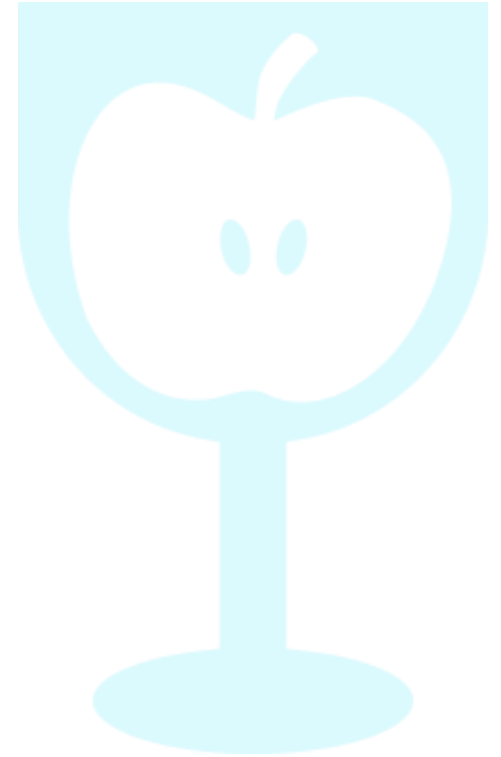
- Bottle conditioned
- Add fresh lees if needed (sugar test)



Thank you

Follow up:

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