Some Like It Hard

An Intro to Making Firm Cheeses

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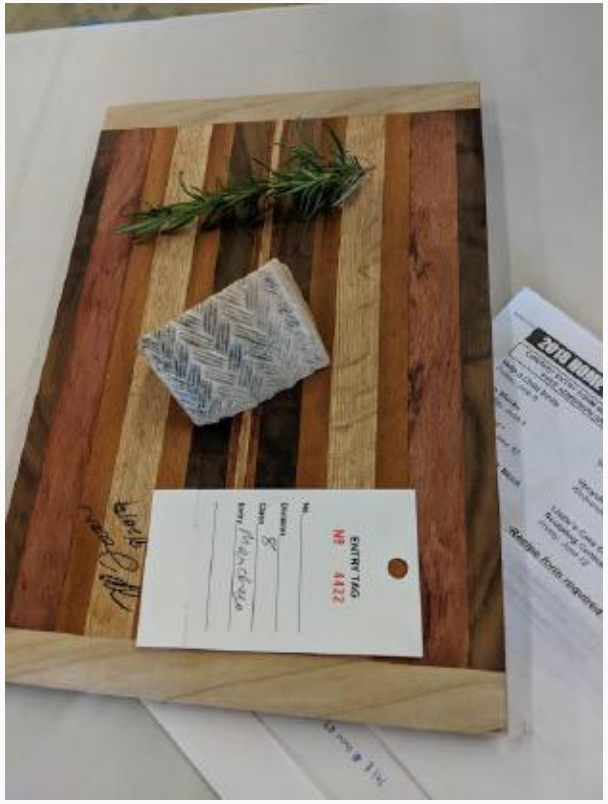
October 6, 2018

QUESO DIEGO
THE SAN DIEGO CHEESE CLUB

Maker Faire® San Diego

Outline

- Intro
- Hard Cheese Basics
- Process Overview
- Process Steps
- Aging
- Example Recipe
- What's Next?
- Q & A



Intro: Who Am I?

- 8+ years of cheesemaking experience
- Queso Diego: Founder, President Emeritus, I.T. Chair
- Hundreds of batches of cheese, dozens of styles
- 2018 SD Fair Cheesemaking Contest Best of Show
- Multi-talented maker: SW Engineer, Homebrewer, Cider Maker, Fermenter, Cook

Intro: Presentation Goals

- Introduce experienced cheesemakers to making hard cheeses
- Get new cheesemakers excited about advanced cheesemaking
- Teach some useful techniques

Hard Cheese Basics

Hard Cheese Basics: What is a hard cheese?

- Cheeses with semi-firm to firm texture
- Designed for extended aging to develop flavors
- More whey removal, lower moisture
- Pressed to expel whey and form a firm wheel and closed rind

Hard Cheese Basics: Why Hard Cheese?

- Some of the best cheeses are hard
- Experience how cheese changes with age
- Have a variety of cheeses on hand

Hard Cheese Basics: Difficult or Firm?

- Should not be your first cheese
- More extensive process steps
  - 4-8 hours active process time first day
  - Pressing at least overnight
  - Aging for months to years
- Sanitation is more critical
- Longer feedback loop
  - Mistakes may not be apparent for months
  - Can take a long time to hone process
- More equipment required

Hard Cheese Basics: Equipment

- Double boiler, sized for desired batches - 2+ gallons
  - Any less may not be worthwhile and unlikely to fill forms
- Cheese press and appropriate forms
  - Most hard cheeses need to be pressed
- Aging space - “cheese cave”
  - Temperature and humidity controls
  - Discussed further in aging section
- Curd knife
- Recommended:
  - Large “piano wire” whisk

Hard Cheese Basics: Ingredients

- Milk - NOT ultra-pasteurized
- Bacterial cultures and molds appropriate to recipe style
- Rennet - animal, vegetable, or microbial; not Junket
- Other special ingredients as specified in recipe
- Salt

Process Overview

Process Overview

- Goals:
  - Produce a curd with proper acidity and firmness
  - Expel enough whey from curd for a firm cheese
  - Press into a coherent wheel without excessive trapped moisture
  - Age to develop flavors, texture, and rind appropriate to style

Process Steps

Process Steps

- Acidification
- Coagulation
- Curd Cutting
- Expelling Whey
- Pressing
- Salting / Brining

Process Steps: Acidification

- Heat to temperature specified for recipe or cultures
- Add appropriate cultures
  - Allow to rehydrate before stirring
- Allow to acidify based on recipe or pH
- Typically 30-60 minutes

Process Steps: Coagulation

- Add rennet and stir gently up/down
- Leave undisturbed and covered
- Test for clean break at end

Process Steps: Curd Cutting

- Cut the curd based on recipe
- Hard cheeses usually use smaller cuts
- A piano wire whisk is a great tool for cuts ¼” or less

Process Steps: Expelling Whey

- Important for hard cheeses
- Various techniques, depending on recipe:
  - Foreworking
  - Stirring
  - Heating (cooking)
  - Washed curd

Process Steps: Draining / Pressing

- Choose the right form for the size and style of the cheese
- Performed in multiple steps
  - Avoid trapping whey inside wheel
- Recipes will usually indicate steps
  - May need to be adjusted for size of wheel
- Flip, and rewrap between each step

Process Steps: Salting / Brining

- Depends on style of cheese
- Can be mixed into curds before pressing
  - 2% by weight of final wheel is a good starting point
- Can be brined after pressing
  - Depends on strength of brine, wheel size, and desired salt level
  - 24 hours in a saturated brine to be a good starting point
- Adjusting salt later
  - Rindless: soak again in strong or weak brine to add/remove
  - Natural rind: sprinkle salt on outside to infuse into wheel

Process Steps: Air Drying

- Allow wheel to air dry prior to aging
- Prevents unwanted growth and starts to develop rind
- Typically about 2 days at low room temperature

Aging

Aging: Overview

- What does aging do?
  - Bacterial conversion of lactose to lactic acid
  - Rind / mold development
  - Tyrosine crystal formation
  - Flavor maturation
- Aging environment
  - Temperature: 50-55 F
  - Humidity: 80-95%
- Time
  - Weeks to years
  - Depends on style

Aging: Example Cheese Cave

- Cooling
  - Any fridge, wine cooler, or freezer
- Controlling Temperature
  - Digital temperature controller, e.g. Inkbird ITC-308, ~$35
- Humidification
  - Ultrasonic “cool mist” humidifier
  - Must turn on when power is applied, e.g. PureGuardian H910BL, ~$25
- Controlling Humidity
  - Digital humidity controller, e.g. Inkbird IHC-200, ~$35

Aging: Cheese Cave Parts

Aging: Maintenance

- Flipping
  - Avoids moisture build-up on one side, keeps aging even
  - Flip every 1-2 days initially, every 1-2 weeks later
- Removing unwanted mold
  - Wipe off unwanted mold with brine
- Sealing
  - After surface is dry, some cheese styles call for waxing
  - Alternatively, wheels may be vacuum bagged
  - Minimal attention required once sealed
  - Not appropriate for natural rind cheeses

Aging: What if I don’t want to wait?

- Your choice
- Can cut a wheel in half or quarters, vacuum seal or wax
  - Will continue to age, but rind development will stop

Example Recipe

Example Recipe: Gouda

- 2 gallon batch, about 2 lbs
- Ingredients:
  - 2 gallons of cow or goat milk
  - ½ tsp Flora Danica culture
  - ½ tsp liquid animal rennet
- Instructions:
  - Heat milk to 86 F
  - Add culture, allow to rehydrate 5 mins, stir in
  - Allow to acidify for 60 minutes
  - Add rennet, diluted with bottled water
  - Allow to coagulate for 45 minutes or until clean break

Example Recipe: Gouda (Continued)

- Instructions (Continued):
  - Cut curd to ½” cubes
  - Allow curd to heal by resting 10 minutes
  - Stir for 5 minutes
  - Allow to rest for 5 minutes
  - Remove whey to just above curd level
  - Add 140 F water slowly until temperature reaches 92 F, stirring
  - Stir for 10 minutes
  - Remove whey to just above curd level
  - Add 140 F water slowly until temperature reaches 100 F, stirring
  - Stir 20 minutes
  - Rest 10 minutes

Example Recipe: Gouda (Continued 2)

- Instructions (Continued 2):
  - Gently ladle curds into desired cheese form lined with cheesecloth
  - Press at 10 lbs for 45 minutes
  - Unwrap, flip, and re-wrap
  - Press at 20 lbs for 30 minutes
  - Unwrap, flip, and re-wrap
  - Press at 40 lbs for 8-12 hours
  - Brine for 18 hours in saturated brine at 55 F
  - Air dry for 1-2 days at room temperature
  - Put into cheese cave and age at 55 F and 80% humidity for at least 2 months and up to several years.

What’s Next?

How to Get Started

- Join Queso Diego
  - Monthly educational meetings
  - Mentoring
  - Library of cheesemaking
  - Local discounts

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www.QuesoDiego.org

- Visit Curds and Wine
  - Local cheesemaking shop
  - Equipment and ingredients
  - Classes

www.curdsandwine.com
7194 Clairemont Mesa Blvd

Recommended Reading

- Artisan Cheese Making at Home
  - By Mary Karlin
- Home Cheese Making
  - By Ricki Carroll

Cheese Styles to Start With

- If you feel you’re ready for hard cheese
  - Dive into making a gouda
- If you have some experience, but aren’t quite ready
  - Feta or Queso Fresco
- If you’re new to cheesemaking
  - Chevre
- www.quesodiego.org/recipes

Questions?

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