The Science of Cheese

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A Little History Lesson

• Little Miss Muffet - Written in 1805
• Pre Dates Recorded History - 8000 BC
• The Moon is Made of Green Cheese
• Milk is MAGIC!
Today’s Lessons

• Provide math, science, agriculture and engineering into one cooking demonstration.

• Today we are using the perfect food – **CHEESE!**
Acidification (Chemistry)

• Water Quality
• The Fast Way or the Slow Way
  • Acid vs. cultures
• Lactose is Converted to Lactic Acid
• The MAGIC of Swiss Cheese

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What about the Milk? (Math)

Barbano Yield Formula

A + B + C

Yield = \frac{1 - ((\text{moisture} + \text{salt})/100)}{}

A = (0.93) \times (\% \text{ fat in milk})

B = (\% \text{ casein in milk} - 0.1) \times 1.092

C = \text{ other milk solids retained in water phase of the cheese}
Rennet (Engineering)

- Rennet is Derived from Ruminant Animals (multiple stomachs)

- Yesterday vs. Today

- **MAGIC!** Turns a liquid into a solid
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It’s Time to Cut the Cheese
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Curds and Whey (Agriculture)

- Environmentally Sustainable
- Socially Responsible
- No Waste
- Essential Nutrients

**MAGIC! We got the white out**
Salt (NaCl) and Flavors

- Adds Flavor
- Slows Down the Acid
- Don’t Skimp

- Dill
- Basil
- Peppers
- Italian Ham

• MAGIC! It preserves your cheese

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Cheese Today

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