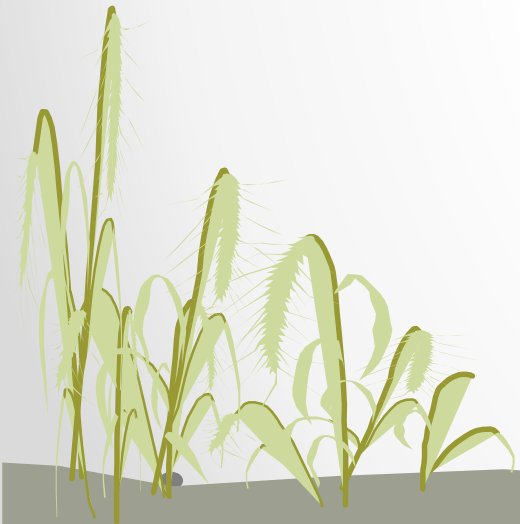




# Optimizing hop oil extraction- small scale

MBAA Sept. 2017



# ASBC Method

## TOTAL ESSENTIAL OILS IN HOPS AND HOP PELLETS

### BY STEAM DISTILLATION

- Apparatus

- 12 L boiling Flask (\$388.68)
- Calibrated Distilling receiver (\$110.25)
- Allihn Condenser (\$277.74)
- Heating Mantle (12 L capacity) (\$875.60)
- Analytical Balance
- Total w/o balance- \$1652.27

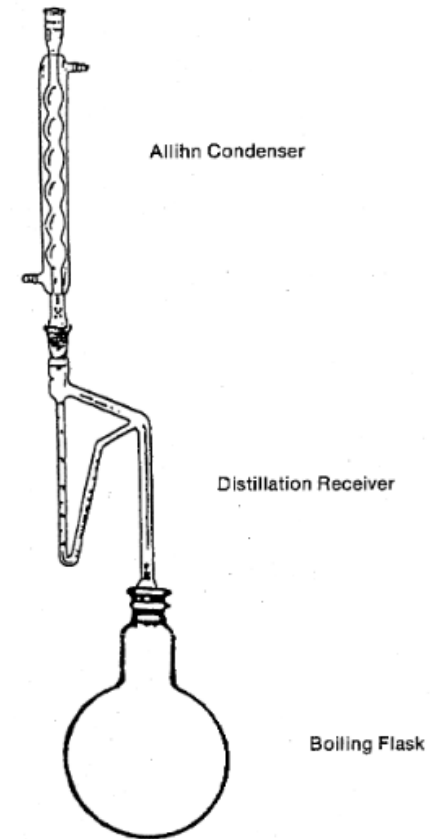
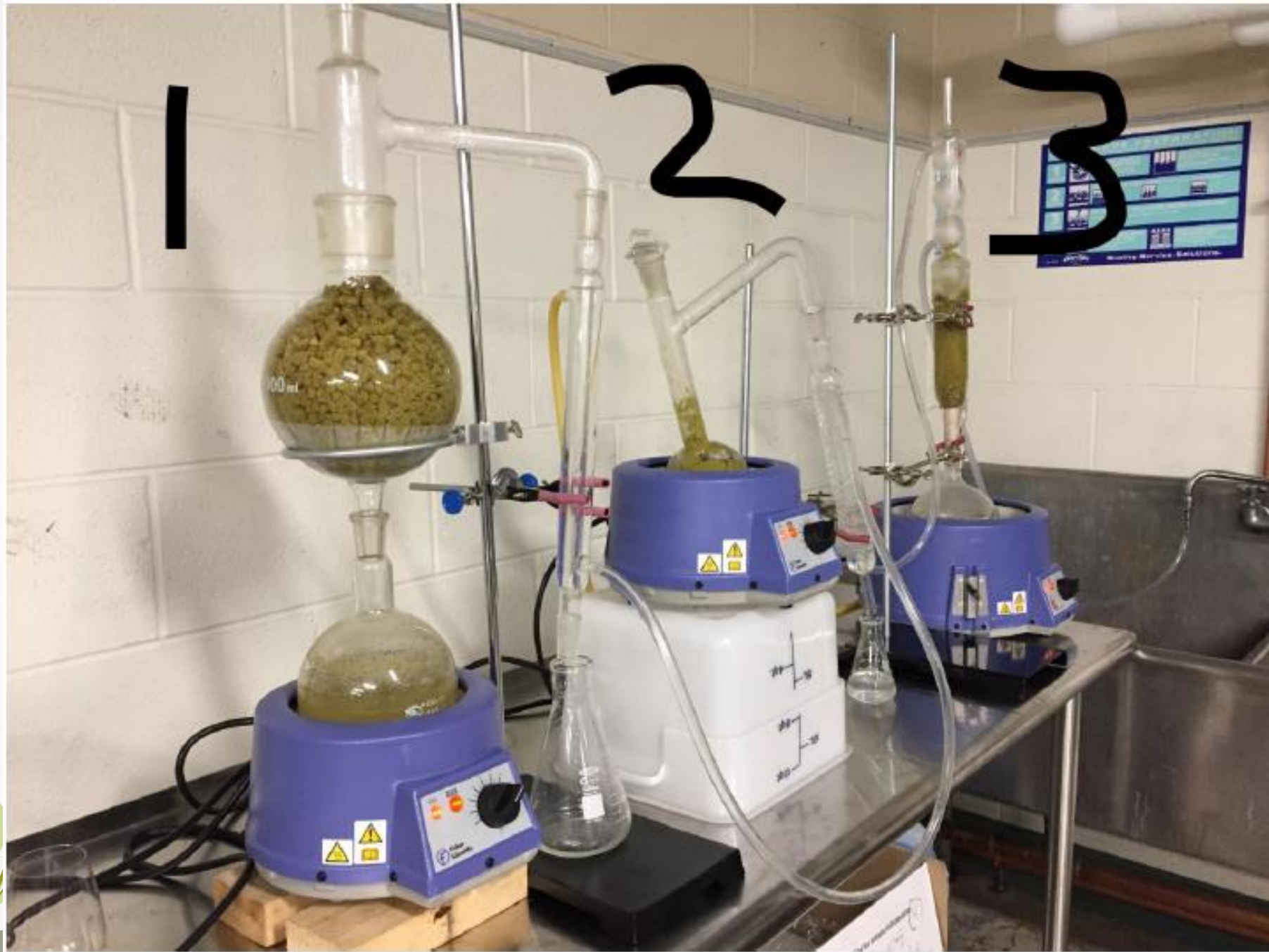


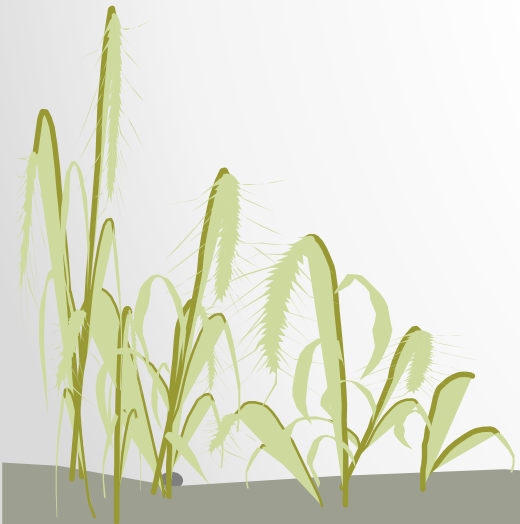
Fig. 1. Distillation apparatus (not to scale).



# 2 and 3

- 3- Soxhlet extraction
  - needs more equipment and another step to separate oil
- 2- distillation set-up
  - Little to no yield

**Epic FAIL**



# # 1 Method

- \$299.00 total (minus lab jack)
  - Purchased online
  - Now on watch list
- Upgraded to a heating mantle
- Best results
- Essential Oil Steam Distillation



**KIT CONTAINS...**  
**Borosilicate Glassware:**  
1. Boiling Flask, 1L  
2. Biomass Flask, 2L.  
3. Distillation Arm.  
4. Glass Stopper.  
5. Condenser, 300mm.  
6. Erlenmeyer Flask, 500mL.

**Hardware:**  
7. Electric Hotplate.  
8. Ring Clamp, 6".  
9. 3-Finger Clamp.  
10. Lab Support Stand.  
11. Keck Clamps (2).

**Included but not shown...**  
12. 5 ft. Amber Latex Tubing (2).

**Optional Lab Scissors Jack**  
(Order Part No. NC-13222)

# Multiple runs

- Biomass Flask
  - 900g hops pellets
  - 1000ml distilled water



- Results- Yielded avg. ~5g of hop oil- (.5% oil)



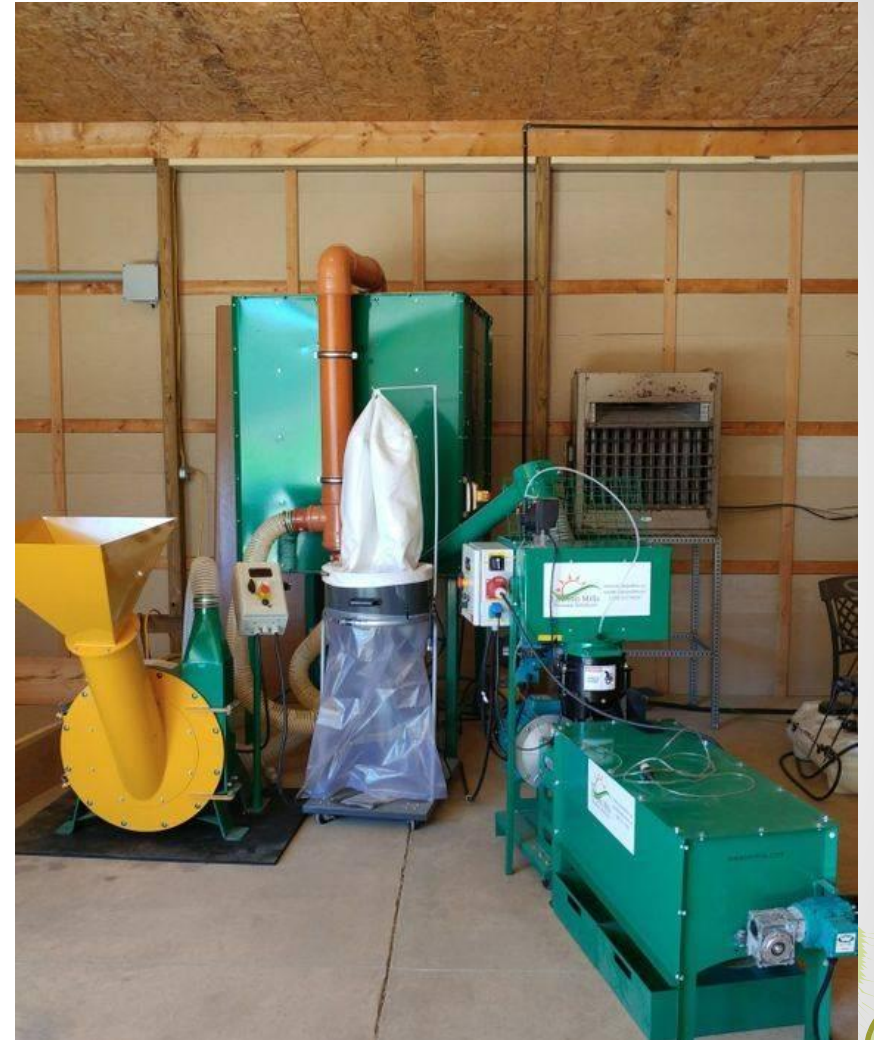
# Why?

- Local hop yards and farmers
- Local terroir and flavor of the hops
- Fresh hop essence
- Flavor Adjustment
- Consistency



# Benefits

- Use is year round
- Pelletizer and kiln hop production
- Quality and consistency





# Questions?

