Applications of Malt Extract in Brewing

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Session objectives

- Define Brewer's Concentrate
- Discuss Brewing Applications
- Discuss Properties and Handling
- Share Pitfalls and Keys to Success

Malt Extract is Not For Brewing!

Malt extract is a commodity product manufactured mainly for the food industry.

Brewer's need a Wort Concentrate.

Brewer's Concentrate-Production

- Using brewing methods and brewing equipment to produce Wort (as opposed to malt extract)
  - With desired FAN
  - Reduced tannins and haze proteins
  - Controlled degree of fermentability
  - Tight color specification
  - Hot break break removal
- Water is removed gently using vacuum evaporation at temperatures as low as 95 F

Brewer's Concentrate-Ingredients

- Brewing grade (A-B) malted barley
- Colors and flavors derived from specialty malts
- All Malt
- Preservative / additive free

Physical Properties-Liquid

- Wort, 80% Solids (Brix, Plato)
- Shelf stable liquid by virtue of an Aw <0.8
- Dense liquid with S.G. of 1.4 and weight of 11.8 lbs/gallon.
- Viscous -10,000 cps @80F

Physical Properties-Dry

- Dried Wort Solids 97% +solids
- Hygroscopic powder
- Dense free flowing powder bulk density 0.6-0.8 gram/cu cent.

Chemical Properties-Liquid or Dry

- Converted carbohydrates with defined carb. profile and degree of fermentability.
- Source of soluble protein and FAN
- Source of vitamins and minerals
- Color / Solids ratio

CBW-Brewer's Concentrate (Cause for concern?)

- Briess purity testing of 10 randomly picked retail samples showed no adulteration among brewing extracts.

Varieties of CBW's

- "Base Malt" –Golden Light, Wheat
  - Used for light colored beers and as base.
- "Recipe Extracts" – Porter, Amber, Stout
  - Formulated to produce specific styles
- Specialty Malt Extracts
  - Used for product adjustment

Brewing applications of CBW's

- Full CBW brewing
- Partial CBW with steep or mini mash
- Wort substitution (High gravity brewing)
- Wort or beer color adjustment
- Yeast propagation

Why Brew with CBW's?

- Savings
  - Time saving (Increased throughput)
  - Labor saving
  - Equipment savings
  - Space saving (a premium in pubs)
- Ease
  - Reduced waste

Ease

Brewing with Concentrated Wort Offers:

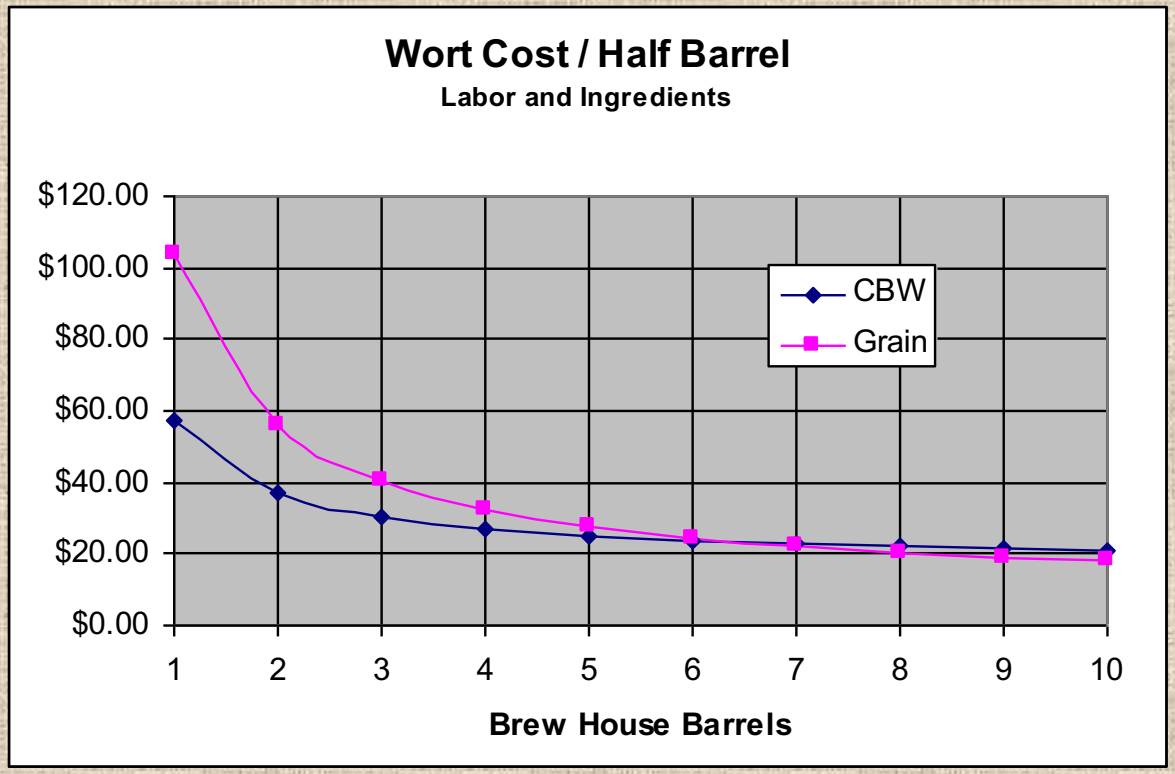
- Consistent yield
- No run off or lautering difficulties
- No spent grain Handling (every small brewer's least favorite job)

Extract calculations are easy!

- One # liquid in one gallon adds 9 Plato (S.G.. +0.036).
- One # Dry in one gallon adds 11.5 Plato (S.G. +0.046)

Wort Production Cost per ½ BBL

Brls	CBW	Grain
1	$57.01	$103.50
2	$37.01	$56.00
3	$30.34	$40.16
4	$27.01	$32.25
5	$25.01	$27.50
6	$23.67	$24.33
7	$22.72	$22.07
8	$22.01	$20.37
9	$21.45	$19.05
10	$21.01	$18.00



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Equipment savings

Mash Vessel (7brl)	$10,000
Lautertun (7brl)	$10,000
Hot Liquor Tank	$3,500
Mill	$1,500
Malt handling	$1,000
Mill Room	$??

Space Savings

50 – 100 SQ Feet Saved For 7-10 Brl System

What Does This Mean for A Typical Pub ?

6 Top X 2 Turns

X $16 Check Average

X 7 Days/ Week

$1,008.00 + Sales/ Week

X .20 Margin

$201.6 + Profit / Week

$10,483.20 + Profit / Year

Limitations-All Extract

- Since the grain bill has already been decided for you by the master brewer who prepared it, you have very little flexibility other than finding out what grains made it and blending to achieve your wort.
- Fixed degree of ferementability of wort.

Example Recipe-All Extract

Weiss (7 Brl)

O.G 1.056 F.G.1.016 IBU 15

All Extract	All Grain
335 # Wheat Extract (Liquid)	216 # Wheat Malt
	144 # 2-Row Malt

1.25 # 7% AA Noble Hops (60 Min)

Bavarian Weizen Yeast

Partial Mash

- Steeping-Minimash of specialty grains
- Use extract as fermentable sugar in substitute for base malt. Steep/mash specialty grains for additional color and flavor.

Example Recipe-Partial Mash

Scotch Ale (7 Brl)

O.G 1.050 F.G.1.014 IBU 15

Partial Mash	All Grain
264 # Light CBW (Liquid)	301 # Pale Ale Malt
25 # Caramel Munich Malt (60 L)	25 # Caramel Munich Malt (60 L)
20 # Victory Malt	20 # Victory Malt
8 # Chocolate Malt	8 # Chocolate Malt
20 # 2 Row Malt	
1.5 # 6% AA Hops (60 Min)	
Ale Yeast	

High Gravity Brewing

- Normal options to achieve 25P
  - Double brew with long boil

  (10 hours, 24 hour day not uncommon)
  - Half batch with long boil.

Example Recipe-High Gravity

Barley Wine (7 Brl)

O.G 1.100 F.G.1.028 IBU 60

Supplemented	All Grain
402 # 2 Row Malt (Liquid)	694 # 2 Row Malt
36 # Caramel Malt (80 L)	36 # Caramel Malt (80 L)
240 # Light CBW	
3 # 10% AA Hops (60 Min)	
2 # 6% AA Flavor Hops (7 Min)	
4 # 6 % AA Aroma Hops (0 Min)	
Ale Yeast	

Finished Product Adjustment

- Intensely colored Black or Red Malt extract
- Manufactured to have very Low Degree of fermentability
- Added prior to final filtration or Pasteurization
- 20 grams/ barrel adjusts 1 degree lovibond in final color

Yeast propagation

CBW can be chosen to match beer style being produced

Sufficient FAN for growth of simple starters (1.020)

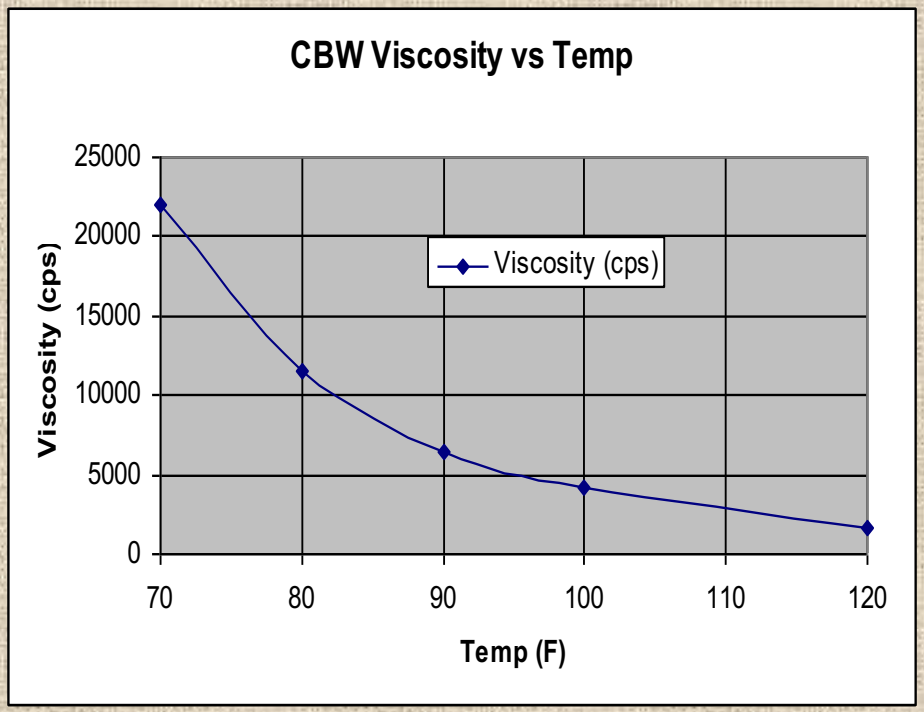
Supplement with yeast nutrients for propagation at higher gravity

Extracts must be boiled

Pitfall 1-Product Handling

- **Liquid**
- Must fully dissolve before adding direct heat
- Need to heat extract or use high viscosity pump

- **Dry**
- Requires good mixing
- Must be stored in sealed containers



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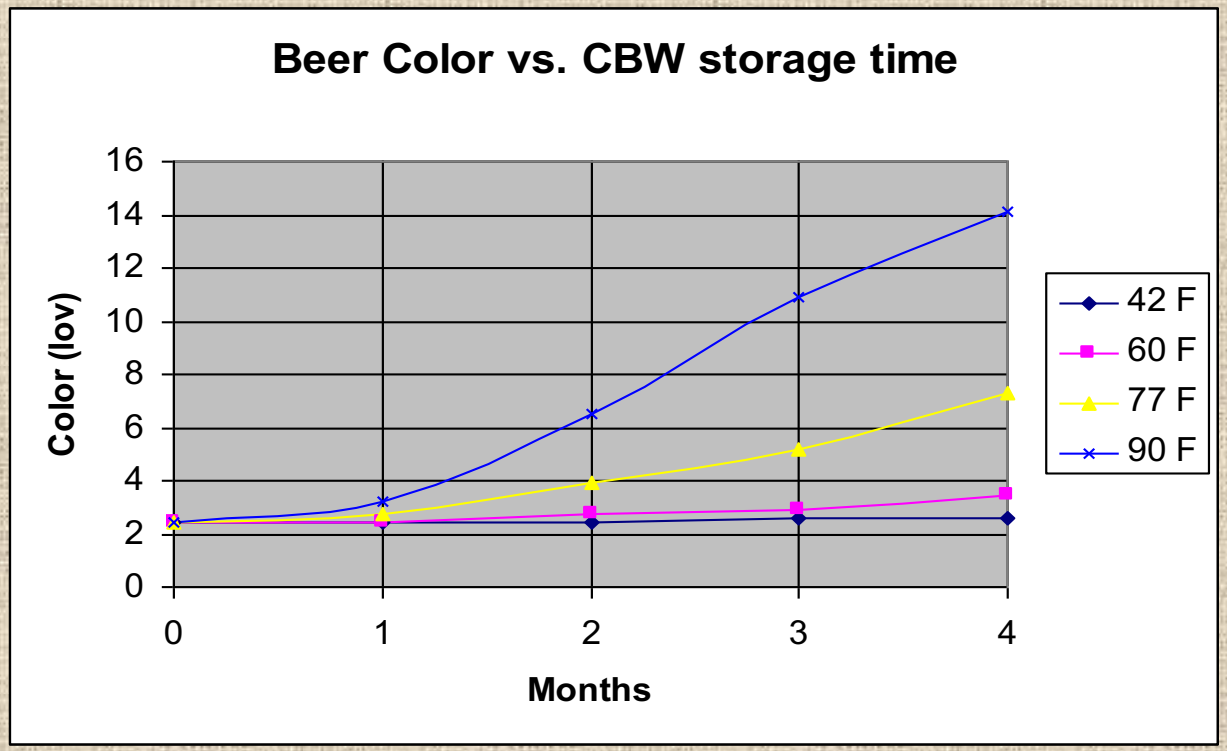
Pitfall 2-Deteriorated Product



Buy Fresh Store Cool

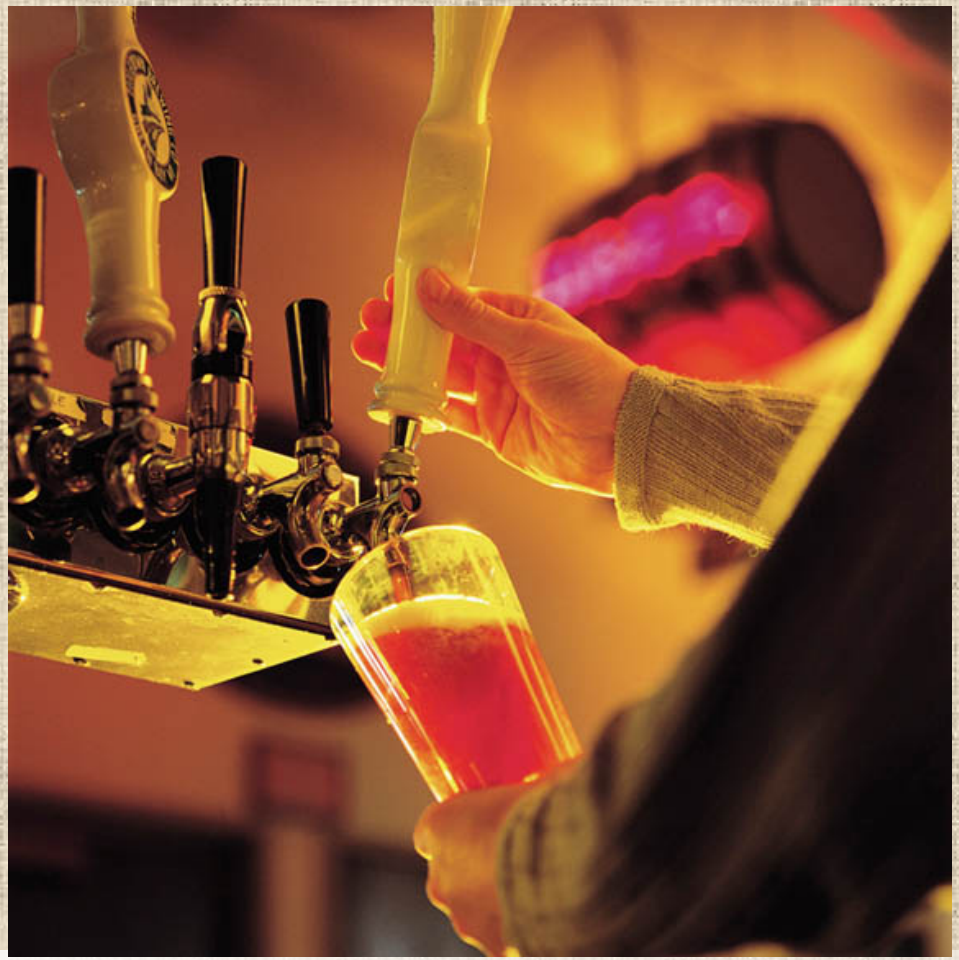
Pitfall 3 – Overestimating CBW's

- CBW's are not instant beer.
- Brewing with CBW's requires the same attention to detail and understanding of brewing fundamentals as all grain brewing.

Summary-What is needed for success

- Buy good ingredients from reputable sources
- Understand CBW's and how they work in formulation
- Handle with care.
- Hire a good brewer

Thank You!



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