



Beer is the oldest fermented beverage known to man.

4 Essential Ingredients to making Craft Brewed Beers

malt means
harvesting barley
harvest grain
wet → germinate
dry roast

MALT

Malted Barley

Produced by steeping raw grain until germination

- Kilned or toasted to achieve different colored malts or specialty malts

Examples

1. Pale malts – backbone malts
2. Caramel Malts – Provides amber/ copper color and caramel flavor
3. Highly kilned or dark malts – provide brown to black color and toasty to roasty flavor

up to 10% of spec ingredients

big brewers use rice/corn

WATER

like terrior – very important

We use reverse osmosis (R.O.) to take minerals out of city water. Then we add minerals back to suit each particular style.

HOPS

natural preservative

"the Spice"

Resins – broken down by boiling – provide bitterness to the beer. Added at the beginning of the boil.

Essential Oils – provide aroma and some flavor to the beer. Added at the end of the boil.

Varieties

YEAST

brewing all at temp

ie Banana in Hef

Ale – ferments at 65-70 degrees F. Takes 3 weeks start to finish. Produce esters or slightly fruity flavors and aromas. Top fermenting.
= fruity

Lager – ferments at 45-50 degrees F. Take 6 weeks start to finish. NO ESTERS. Bottom fermenting.

Why has beer endured 5,000 years?

People love it.
It's healthy.
It's cheap.
Image.
It has alcohol.

styles

yeast character
malt character
hop character

Pilsner – 1st Lager
#1 beer on planet Check

Steam Beer Name trademarked in the United States and some other countries by the Anchor brewery of San Francisco for its unique hybrid of ale and lager. Serve at not less than 7°C (45°F). A sociable beer or apéritif. In countries where the name has not been protected other brewers have launched "Steam" Beers, but not made by the same method.

Stout Almost black, roasty brew made by top-fermentation. English Stout (see page 171) is often sweet, and is a good mid-afternoon restorative. The more famous Irish style (see page 179) is dry, intense, sociable, and wonderful with oysters. Best not chilled. See Imperial Stout.

Trappist Strong, fruity, sedimented ales made by Trappist monks in Belgium (see page 129) and the Netherlands (see page 142). Some have a port-like character. Serve with reverence, at room temperature, in a goblet. Do not store chilled. Good with blue cheeses.

Ur-/Urquell "Original source of," in German.

Vienna Reddish-amber, sweetish, malt-accented lager, originally brewed in Vienna (see page 192) but the inspiration of the German Märzenbier. Good with pork, chicken and spicy dishes such as Mexican food.

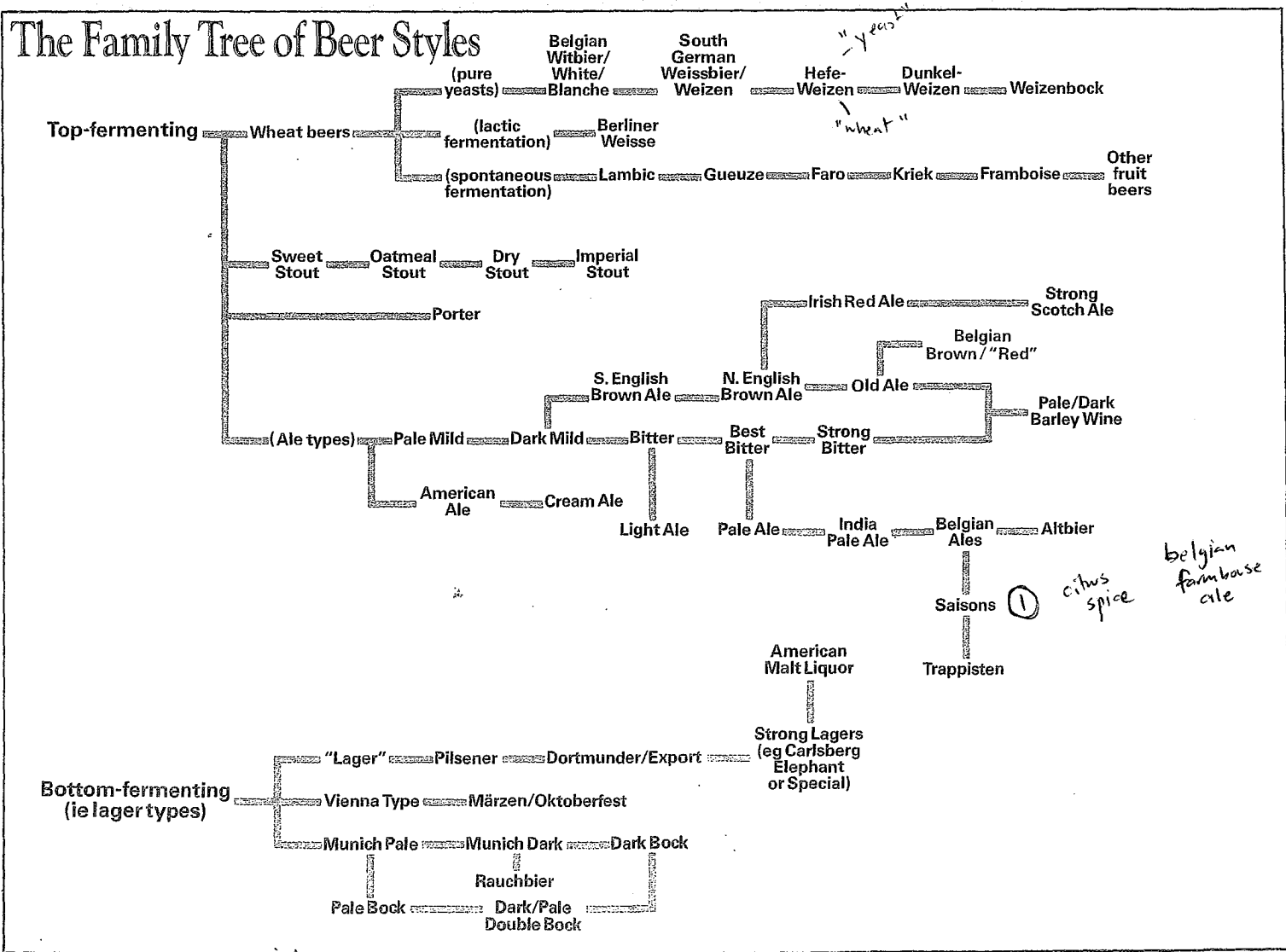
Weisse/Weissbier/Weizenbier German words for "white" or Wheat Beers. For northern German style, see Berliner Weisse. Southern examples, served in a tall, vase-shaped glass (see page 59), have notes of apple, plum, perhaps clove. Sharply fruity, refreshing summer beers. Sometimes offered with elderberry fritters. Serve lightly chilled. A slice of lemon as a garnish is optional.

White Beer General term for Wheat Beers. Apart from the German styles, Belgium has Muscat-like white beers. (See page 122). Serve lightly chilled as a dessert beer.

Ideal serving temperatures

| |
|---|
| Well chilled (7°C; 45°F) "Light" beers; American and Australian lagers |
| Chilled (8°C; 47°F) Berliner Weisse |
| Lightly chilled (9°C; 48°F) European lagers; all Dark Lagers; Altbiers; German Wheat Beers |
| Cellar temperature (13°C; 55°F) Regular ales and Stouts in the styles of the British Isles; most Belgian specialties |
| Room temperature (15.5°C; 60°F) Strong Dark Ales (especially of the Trappist type); Barley Wines |

Such fine distinctions are not always possible. In general, the "chilled" categories should be served from the refrigerator, which should be set at as gentle a temperature as is possible. The other categories should be kept in a place that is not refrigerated, but naturally cool and dark.



18U - int. bittering units
 creamale 10ibu
 w/ 11 B
 pale ale 35
 IPA 60-70
 d/11 IPA 200
 Michael Jacksons
 World Guide to Beer

Examples of styles with Yeast Character

Belgian Tripel - Westmalle

Belgian Dubbel - Westmalle

Belgian White - Hoegaarden

Saison - Saison Dupont or Foret, Funkwerks

Hefeweizen - Franziskaner

Examples of styles with Hop Character

IPA - Russian River Blind Pig

Pale Ale - Firestone Pale 31

White IPA - Deschutes Chainbreaker

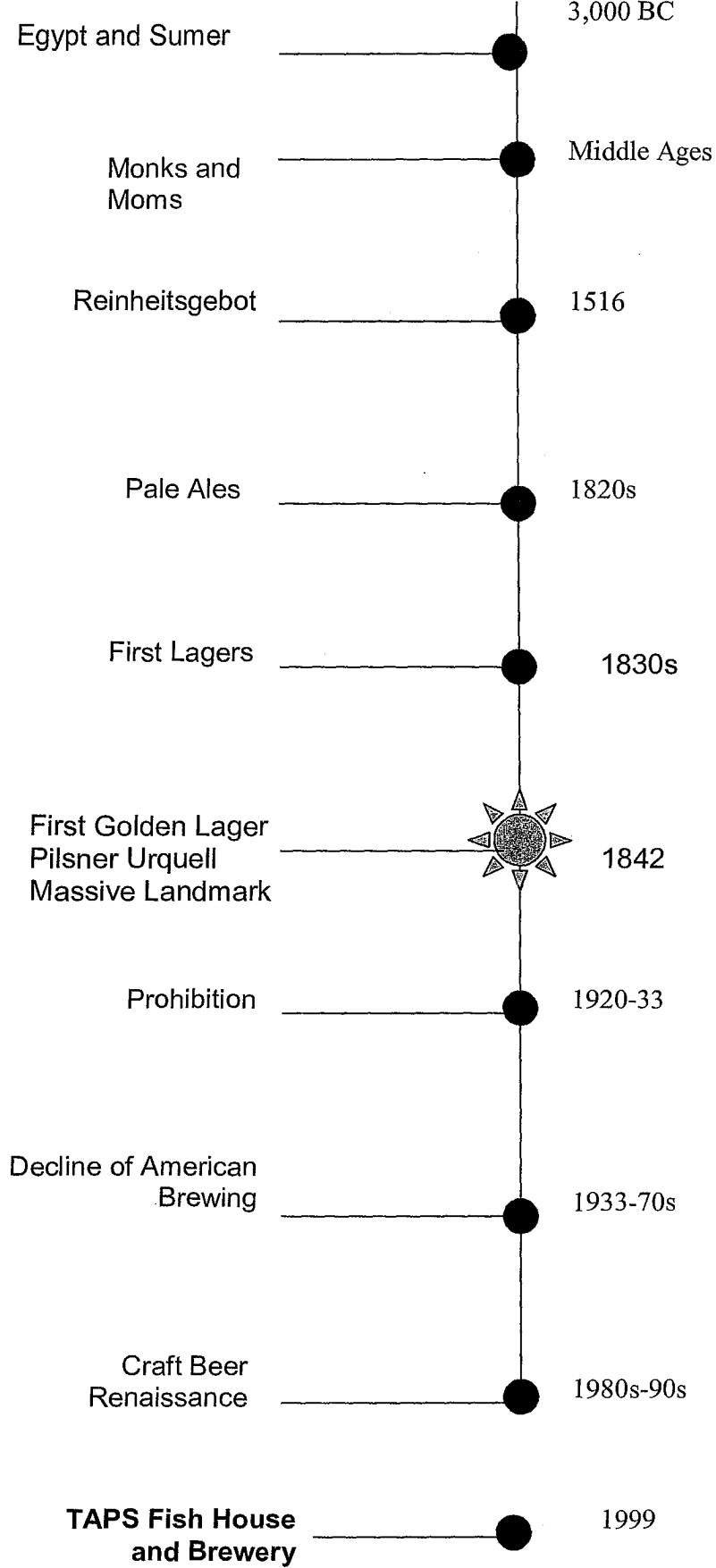
Belgian IPA - Green Flash Le Freak, Stone Cali-Belgique

Examples of styles with Malt Character

Doppelbock - Spaten Optimator, Ayinger Celebrator

Scotch Ale - Traquair Scotch Ale, Oskar Blues Old Chub

Barleywine - Anchor Old Foghorn (English style),
Sierra Nevada Bigfoot (American style)



Beer Prayer

*Our lager,
Which art in barrels,
Hallowed be thy drink,
Thy will be drunk,
(I will be drunk)
At home as in the tavern,
Give us this day or foamy head,
And forgive us our spillages,
As we forgive those who spill against us,
And lead us not to incarceration,
But deliver us from the hangovers,
For thine is the beer,
The bitter and the lager
Forever and ever.*

BEERMEN

What's BREWING

Fall has traditionally been the time when beer consumption spikes. At football and hockey games, the World Series and especially Oktoberfest celebrations, beer is king. In fact, Oktoberfest began in 1810 as an elaborate wedding reception for a Bavarian king and is

now celebrated in countries around the world, including the U.S., where a resurgence of brew pubs has attracted attention to the beer-making craft. In honor of the German holiday and the revival of handcrafted American beer, here's a closer look at microbrewing.

- 1 MILLING (Up to 2 hours)**
- 2 MASHING (30 minutes to 2 hours)**
- 3 BREWING (30 minutes to 1 1/2 hours)**

Store malted barley in **grain silo**. Depending on beer recipe, blend additional grains in **roller mill**. Transport milled malt, called **grist**, by auger to **elevated hopper**.

Mix grist with hot water in **mash tun**. Mashing converts starches in malt to sugars.

Pump hot wort to **brew kettle**, bring to boil. During boil, add bittering **hops** at beginning, hops for aroma and flavor at end.

Silo holds up to 24 tons of 2-row malt.

Mash tun holds up to 3,000 lbs. grain.

212°F

Cool by pumping through **heat exchanger**, dropping temperature.

Rotating rake stirs mash.

Grated bottom strains sweet liquid, called **wort**; spent grain discarded.

Archimedeian screw draws grain from silo to hopper.

Carbon dioxide

Fermenting wort

Fermenters

Foamy **carbon dioxide** bled from tank.

More **grain** means higher alcohol content; darker grain produces richer coloring.

38°F

Up to 15 gallons of yeast, reused from previous batches.

4 FERMENTING (3 days to 2 months)
Inject **yeast** to initiate fermentation. Yeast ingests sugars in wort, produces alcohol and carbon dioxide.

Diatomaceous earth filter removes yeast from beer.

5 SERVING (Batch typically lasts 2 weeks)
Carbonate and store beer in chilled serving tanks.

Serving tank, 38°F.

Bar tender pours beer from tank.

Customers drink beer.

