BREWING ADJUNCTS
TOPICS

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WHAT ARE BREWING ADJUNCTS

German Beer Purity Law

Water, Barley, Hops
American Beer Purity Law

NONE!!
WHAT ARE BREWING ADJUNCTS

Sources of starch like grains or grain products that have not undergone the kilning process to convert them into malts but can also be soluble sugars.

**MASHABLE AJUNCTS**
Corn, Rice, Rye, Oats, Barley, Wheat, Sorghum

**KETTLE ADJUNCTS**
Cane Sugar, Brown sugar, Belgian Candi Sugar, Honey, Rice Solids or Syrup

**OTHER**
Fruit, Vegetables, Herbs, Dairy, Proteins (oysters, nuts)
BREWING WITH MASHABLE ADJUNCTS

These adjuncts are mashed to activate enzymes that convert their starches into sugars

- Corn
- Rice
- Rye
- Oats
- Un-malted Barley
- Wheat
- Sorghum

**MASH TEMPERATURE VARIATION**

Gelatinized at a different temperature than malted barley

- Malted Barley: 147 - 152 | Un-malted Barley: 140 - 143
- Wheat: 125 - 147 | Corn: 143 - 165 | Rice: 142 - 172

**STEP MASH**

Un-malted barley and wheat can be mashed along with the malt

- Step temperature mashes can be used in this case
- Depending on the base malt the amount of adjunct can vary

- American 6 Row: 50%  |  American 2-Row: 30%  |  British Malt: 20%

**CEREAL MASH**

Corn and Rice are mashed separately at a higher temperature

- 10% of the cereal mash grain bill is malt.
- Higher cereal mash temperature makes them less viscous.

Cereal mash is then added into the main mash

**ENZYME DEFICIENCIES**

- Flaked and Torrified (Puffed) grains contain no enzymes because of the process used to flake and torrify them. They rely on the surplus enzymes from the malt.
BREWING WITH KETTLE ADJUNCTS

- **Added to the boil** to dissolve and sanitize
- **Less protein** than malt so they can help clarity
- Should be **10% or less of fermentable sugars.**
- > **10% dilutes amino acids** causing yeast to starve
- **Add yeast nutrient** to boost amino acids

- Cane & Brown Sugar
- Belgian Candi Sugar
- Honey
- Molasses
- Maple Syrup
- Rice Solids or Syrup
BREWING WITH FRUIT

**FRUIT SUGARS**

- Most fruits contain **10 to 15 percent sugar**: fructose, glucose, and sucrose.
- Fruit **increases beer's specific gravity** so use this formula to determine how much:
  \[
  SG = \frac{(\text{FruitWeight(lbs)} \times (\%\text{SugarInFruit/100}) \times 45}{\text{GallonsOfBeer}}
  \]
  
  \[
  (2 \times (10 / 100) \times 45) / 5 = 1.8 \text{ gravity points (so 1.060 becomes 1.062 if you round up)}
  \]

- **The sugar in fruit will be fermented out.** If you want a slight sweetness to your fruit beer then add un-fermentable sugar like lactose when bottling or kegging.

**REMOVING FRUIT PECTIN**

- Fruits contain **pectin which can cause haze** in your beer. The most common brewing fruits, raspberries, cherries, strawberries, blueberries, apricots, and peaches have lower pectin than most other fruits.
- **Add 1/4 tsp of an enzyme called pectinase per 5 gallons** during primary fermentation to degrade the fruit pectin.
FRUIT PH

The PH of fruit is lower than beer so adding fruit will lower the PH and can make beer tart. Lambics are tart because food grade acid is added to them. Lactic and malic acid are the two most common used.

FRUIT IN THE BREWING PROCESS

Fruit can be added to the mash, to the boil by steeping in a nylon bag, or in secondary fermentation which is the best time to add fruit but you risk infection if the fruit has not been sterilized.

OTHER OPTIONS

Purées, concentrates, and juices are another option to using fresh fruits.
OTHER ADJUNCTS

Protiens: Peanut Butter Porter, Oyster Stout

Gourds: Pumpkin Ales

Coffee: Coffe Stout

Vegetables: Habanero IPA

Herbs: Ginger, Coriander, Basil, Pepper Corn
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