

Grain



Malt is barley that has started to grow and then dried. Grains such as wheat, rye and oats also may be malted, but barley is the main workhorse in our craft. The skill of the Maltster involves tricking the barley seeds into germination, during which the grain makes available its starchy reserves to fuel its new growth. Enzymes attack these starches and alter them ready for the mashing process when the starches turn into sugars. The Maltster turns up the heat source removing all moisture, stopping any further germination.

Various temperature levels are used to produce different types of malt with a range of colours.

All we need to do now is just add water to make our ale.

Ancient History

Barley is an ancient cereal and has been recorded being used as far back as 6000 years BC. It was brought into this country in the eighth century and traded for Cornish tin .



Mmmmmm

What shall I use... *Maris Otter, Pearl, Optic, Golden Promise or Halcyon?*

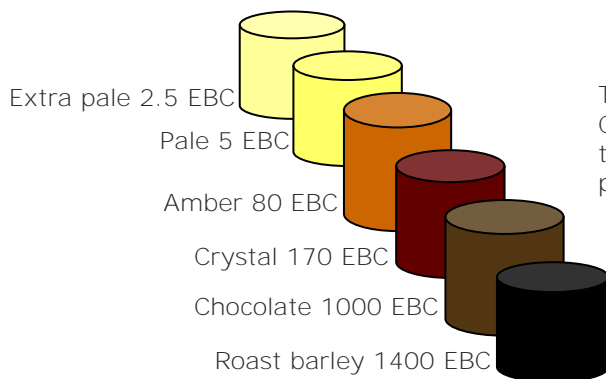
“Independent tests shown that Maris Otter came out on top to be a more flavoursome malt for brewing”

“Pearl is genetically bigger in size and yields more extract and in today's financial climate this malt is favoured by the bigger breweries.”

Generally our group didn't find any difference in the flavour between Pale malts.

Malt Colours

Barley malt comes in different shades from pale straw to black. Here are some malt types:



The colours are graded in EBC (European Brewing Convention) units. Colour specifications do vary between maltsters due to the difficulties in kilning to precise colours.

Purchasing Malts

.....crushed or whole?



“Ales tend to taste better when whole grain is crushed on the day of brewing, I feel that grain crushed 3 or 4 months prior to brewing has lost a certain freshness, however, some people brew ale using 12 month old crushed malt and say that they can't find a difference”

“The founder of the CBA, said the first thing you need to buy when setting out in full grain brewing is a decent malt mill”

“I feel I get a better extract crushing my own whole grain”



Grain or sugar in our recipes.....? Barley malt gives our ales body, colour and taste where as too much sugar obviously increases the alcohol content but tends to dilute what we put into our ales, leaving our ales solvent and thin.

“Acid malt can be used in small amounts as opposed to initial water treatment. The grain is steeped in lactic acid as part of the process of being kilned. Ales brewed with acid malts tend to be smoother in mouth feel ”

‘ I substitute Low colour Maris Otter malt for lager maltI seem to get better efficiency from lager malt”

“When setting out as a beginner as long as your water is not extremely soft or hard it is better to let the pH do what it will. Malts of your chosen style ale can influence your pH just as water treatment can. The darker the malt the less acidification is needed”

The mashing of Grain

When your mash liquor is stable at strike temperature carefully add the grain or grist (brewspeak) to the mash tun liquor stirring thoroughly ensuring no dry pockets. However we must not over stir or the mash will become water logged and set hard on the tun bed.

Enzyme activity

There are a couple of enzymes at work during our mashing time known as alpha and beta amylase.

70c

Alpha amylase converts starch into maltose and dextrins and prefers a mashing temperature of around 70c and a pH of about 5.6. Maltose is a sugar that is highly fermentable by our yeast. Dextrins are sugars which are not generally fermentable by our yeast and will remain in our ale to give us body and sweetness. Beta amylase will over time attack some of the dextrins and turn them into fermentable maltose in our finished ale.

60c

Beta amylase converts starch into maltose only and prefers a mash temperature of 60c and a pH of about 5. A mash of this temperature will give us a thinner ale



typical temperatures.

Hot liquor tank set at 78c
Strike at 74c
Final mash at 66c



“ Starch conversion may be complete in 15 minutes, so Im cutting my mash time down from 90 to 60 minutes”



“Decoction mashing.....wellnah, Ive never had the urge to go down this route, why spoil a good thing?”



Rinsing of grain during sparging

After the mashing time has elapsed it is necessary to empty the sweet wort from the mash tun to the boiler. This is done by very **gently** transferring the wort from the bottom of the mash tun to the boiler. The sweet wort transferred visually should be clear or bright and if it isn't it should be returned to the top of the tun until it does run bright. The sparging consists of spraying the grain with mineral treated water at a temperature of 77c to 80c. Sparging normally is halted when the original gravity falls to around 1005.



Sparging of the Grain.

“What do you normally sparge down to?.....I never measure it, lifes too short, I stop when my boiler is full and I can never fault my brewed beers”



“ If I run short in filling up my boiler from the mash tun I will liquor back well before the end of the boil, im sure I can taste the water if I liquor back at the end”

“I hear that some craft brewers don't treat their sparge water, it should be treated the same as your mash liquor”

Disposal of spent grain

After a 10 gallon mash you are left with 10kg of soggy wet grain which can become a problem if left to stand for a number of days. If you dispose of it in the bin it can become pungent and a health hazard. Commercially spent grain is sold to the cattle farm industry for cattle feed.



The bio bed.



“ The local egg farmer gives me a dozen eggs for my spent grain”

“I spread it around the garden and dig it into my flower beds”

“I have a raised vegetable plot at the bottom of the garden, all the brewery waste is raked into this bed, and for some reason the worms love the spent malt”