

## Part Eight: Formulating the Mash

For the purposes of this article, I am relying on Pale Ale Malt to supply most of the fermentable material, whilst using other grains, etc, to vary the character of the finished beer. I shall take each in turn and discuss the way it affects the colour and/or flavour.

**Pale Ale Malt:** A very acceptable all-malt bitter or light mild can be made using this grain alone. It will necessarily be pale in colour, closer, say, to Taylor's Landlord or Golden Best than to Sam Smith's Old Brewery Bitter.

**Crystal Malt** This is unusual amongst malts in that it has already been 'mashed' within the husk before drying. It contains a high proportion of non-fermentable, coloured sugars and will add colour, body and sweetness to the finished beer.

**Wheat Malt:** Apart from Weizenbier, where it can comprise up to 70%, this is a useful addition to British style beers, say 5% to 10%, where it contributes to flavour and head retention.

**Black Malt:** Highly coloured, it is used in small quantities in dark beers and stouts (but not Irish stout). If over-used, it can make the finished beer too acrid.

**Chocolate Malt** Not quite as dark as black malt, this has less acidity and is a useful ingredient for sweet stouts. I remember a visit to the Cook Street Brewery in Salford about twenty years ago when Mackeson was made there; chocolate malt was the main flavouring and colouring ingredient. I would use about 15%, the balance being mainly pale malt. Some sweetening is also beneficial (eg lactose, a non-fermentable sugar).

**Roasted Barley:** As an aficionado of dark beers with a dry palate, including Irish style stout, I rate this as my favourite adjunct. In a stout, I would use up to 10%, with an equal quantity of Flaked Barley (see below), the remaining 80% being Pale Malt. In milds, 2-3% will produce all the colour you need, whilst the distinct dry flavour remains unmistakable.

**Flaked Barley:** Looking a bit like uncooked porridge, this is the other essential adjunct for Irish stout. Unlike all the ingredients so far listed after pale malt, this contains high proportions of unmodified starch, which relies on the diastase enzymes in the pale malt to convert it to a fermentable form. It must therefore be included in the mash, whereas the others are usually included more for convenience in preference to putting them in the boil. The flakes add a grainy flavour to the beers, and being rich in water soluble gums they help with head retention. Use in pale beers should be restricted to lower percentages to avoid possible haze problems.

**Torrefied barley:** Made in a similar way to popcorn or 'puffed wheat', it is a large, low density grain which is said to open up the mash and make sparging and sugar extraction more efficient. Both the torrefying and flaking processes make the unmodified starch more open to conversion by the diastase enzymes.

**Flaked Maize:** Looks like cornflakes, but much tougher and a paler yellow. Again needs external diastase to convert it. The 'corn' taste can be quite noticeable if high proportions are used.

**Flaked Rice:** As above, but white, and contributes no colour and very little flavour. Best regarded as a diluent to Pale Ale Malt when making high gravity pale ales, where it reduces the risk of nitrogen haze, whilst maintaining the 'body' of the finished beer.

**Sugars:** Common household sugar (sucrose) **can** be added to the wort before or after boiling. It will increase the final alcohol content of the beer whilst reducing the body, since it is 100% fermentable. Overdone, it will produce an unbalanced, headache-inducing brew. I would only use it in very small amounts, to increase the original gravity by a point or two where my mash had come out lower than expected. However, quite a number of home-brew 'kits' rely on quite large amounts of this ingredient to supplement their malt extract base. Enough said!

Commercial brewers use a range of coloured sugars, not generally available to the home brewer. Dave Line<sup>5</sup> was a fan of dark sugars such as demerara, soft brown and Barbados. I once used Barbados in a dark brew and found the resulting 'molasses' taste, stripped of its sweetness in the finished beer, obtrusive and inappropriate. However, Graham Wheeler<sup>11</sup> acknowledges that some famous names use sugar and that hi strong beer they can reduce the cloying which would result from an all-malt formulation.

Another sugar which used to be widely available was 'glucose chips', sold by home brew shops. This came in large buff-coloured chunks and I believe was derived from maize starch by acid hydrolysis. Their process Inverts' the sugar: it is broken down into simple glucose and fructose molecules, which are said to be more quickly fermented by the yeast. It is also reckoned to yield a 'drier' end flavour.

### Recipes

I don't intend, in this series, to give a large collection of recipes. I haven't yet touched upon hops, which are an equally important ingredient. However, two books stand out and are worth acquiring: Dave Line's second volume<sup>8</sup> and Graham Wheeler & Roger Protz<sup>11</sup>. Unlike all others, both these name commercial beers, (including many now extinct favourites) and give recipes which will result in a beer approximating to the original. Next time, boiling the wort.

### References

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|----|-------------------------------------|----------------------------------|------------------------------|
| 5  | The Big Book of Brewing             | by Dave Line,                    | AmateurWinemaker/Argus Books |
| 8  | Brewing Beers like those you Buy    | by Dave Line,                    | AmateurWinemaker             |
| 11 | Brew Classic European Beers at Home | by Graham Wheeler & Roger Protz, | CAMRA                        |