BARLEY

Grain Nitrogen (1.5 -1.8 g/100g DM)
Germination Levels >97%
Clean well filled grain
98% Varietal purity

Conditioning of grain if appropriate

MICROMALTING

Phoenix micromalting systems are programmed to mimic stages of the commercial process.

Steeping : raises moisture content to around 45%

Germination: Enzymes produced which will degrade starch, proteins and cell wall materials.

Kilning: Gentle drying to stop germination, preserve enzymes, develops flavour and colour. Produces a stable, storable product.

MALT ANALYSES

Malt analyses can be conducted to either IOB (Institute of Brewing) or EBC (European Brewery Convention) methodologies. The differences between the IOB and EBC methods for analysing the hot water extract content of malt are as follows;

IOB Extract: This procedure has been developed to mimic infusion mashing which is used in ale brewing where well modified malts are utilised. The Buhler-Miag malt mill is set to 0.7mm, producing a coarse grist from the malt. The extraction temperature is at a constant 65°C and the mash thickness is more dilute than that of the EBC mash. Greater differences in extract and wort viscosity can be observed when comparing samples analysed using the IOB extract method. The IOB extract content of malt is expressed as litre degrees per kilogram (l°/kg) dry basis.

EBC Extract: This procedure has been developed to mimic decoction mashing which is used in lager brewing where less well modified malts are utilised. The Buhler-Miag mill is set to 0.2mm, producing a fine grist from the malt. The extraction temperature is programmed between 45°C and 70°C and the mash thickness varies due to the addition of water during the assay, but overall is thicker than the IOB mash. The grind, temperature programme and mash thickness, all lead to a greater degree of extraction than the IOB procedure, but this makes it less discriminating. The EBC extract content of the malt is expressed as %w/w dry basis.

Malt Nitrogen: The analysis is carried out using a Dumas gas analysis system. The results are expressed as g/100g on a dry basis. The total nitrogen content of a particular sample is of importance because it has been recognised for many years that there is an inverse relationship within varieties between total nitrogen content and the hot water extract content of the malt. The main reason for this relationship is that fermentable sugars are derived from carbohydrates, especially starch, and an elevated total nitrogen content often means a reduced amount of starch. In addition high nitrogen content inhibits enzyme movement and hence modification during the germination phase of malting.

Colour: The colour of a laboratory wort is compared with standard EBC colour discs. There are usually only small differences in colour between worts produced from malts made under standardised conditions. Wort colour is particularly influenced by kilning temperature, high temperatures during the final stages produce darker coloured worts.

Total Soluble Nitrogen (TSN): A sample of wort is analysed for nitrogen content using a Dumas gas analysis system. The total soluble nitrogen is expressed as a weight percentage of the dry malt. This character is of interest because it can influence the clarity and colour of the wort and is also used to calculate the soluble nitrogen ratio (SNR) of the malt.

Soluble Nitrogen Ratio: This character is determined by calculating the ratio of the total soluble nitrogen to total nitrogen content for a particular malt sample. These ratio's give a useful indication of the total proteolytic activity during malting and mashing and the degree of modification of the malt.

Diastatic Power: Diastatic Power is measured from the production of reducing sugars when a buffered starch solution is hydrolysed by an enzyme extract from the malt, the results are expressed in Institute of Brewing (°IOB) units. This character is of considerable importance to the distilling industry, but is of less direct relevance to brewers since most varieties generate sufficient enzyme activity for their purpose.

Wort ß-Glucans: Wort ß-glucans are un-degraded polysaccharides which are present in malt extracts and can cause problems during processing. Typically these problems are associated with wort separation, beer filtration and haze formation in beer.

Glycosidic Nitriles: Some barley varieties produce high levels of cyanogenic glucosides when malted. The use of these varieties in the distilling industry, under certain conditions, can produce significant levels of a potentially carcinogenic compound. Identification of low GN producing varieties is priority for the distilling industry.