

Education

Teacher's Kit

The malting process

Malting is the process whereby cereal grains, usually barley, are treated to convert the stored starches in them into sugars. These malt sugars can then be removed by dissolving them in boiling water. Most commonly this malt liquor becomes the feedstock for yeasts in the brewing process or for whisky distilling. However, unfermented malt sugars are also used as flavourings for sweets, drinks and breakfast foods.

Making malt

- First the grain has to be started into life. Germination is encouraged by soaking in a steep or vat for several hours. This will activate the enzymes, which convert starch to sugars within the grain.
- The grain is removed from the steep and allowed to grow for a number of days, during which little roots will form. To prevent the grains from matting together, and to keep temperatures even (heat is generated in the growing process), the malt has to be turned over and raked at regular intervals.
- Sugar content is at its maximum at the moment when the growing shoot begins to develop; thereafter the shoot will start using the sugars to gain the energy to grow. At that point therefore the growth in the grain is stopped by heating it up to a temperature high enough to kill it, usually in a kiln.
- After steeping, the wet barley was spread out in large rooms, to a depth of about 15cm. Two or three times a day the barley was turned over using a special rake or a shovel and fork. The malt floors had only very small shuttered windows, and these were opened and closed to control ventilation and maintain a suitable temperature on the floor. In summer it was usually too warm to make malt because the grain could not be kept cool enough: to overcome this, from the 1930s onward, many maltings had air-conditioning installed.
- When the malt was ready, usually after five or six days, it was shovelled into the kiln. This had a perforated floor underneath which were furnaces. The smoke and heat from these rose through the floor and dried the grain, the traditional tapering roof of the kiln was to encourage a strong draught to pull the heat through the bed of malt. In the kiln, too, the malt had to be turned over. Today mechanical turners are used, but in the past this was an extremely hot and unpleasant job. How long the malt was left 'on the kiln' depended on what it was used for: it became darker and more bitter as the sugars caramelised and even burnt.
- Then, once cool, it would be bagged up ready to be sent to a buyer.



The Maltings at Ditherington Flax Mill, Shropshire
© Historic England Ref: aa022753



Hythe Maltings, Colchester, Essex
© Historic England Ref: AA98_05281



Beer bottling equipment at Hook Norton Brewery Museum, Oxfordshire
© Historic England Ref: aa030946

Education

Teacher's Kit

The distinctive shape of maltings buildings provide a good opportunity for pupils to use deductive skills. Generally maltings have the same basic layout, although number of stories and location of steeping and storage operations differ. Sometimes there is a kiln in addition to the one for malting to dry out the barley on its arrival.

Use this image as a basis for your activity:

- Look for clues outside to show what happened in the rooms behind.
- Draw what you can see, labelling the germinating room, storage space and kiln.
- Inside, look for clues to support your labelling.
- Use the tick lists as a reminder.

Outside

Kiln

- has a furnace at the base
- has tapering roof to draw air upwards
- is higher than the rest of the building because hot air needs to be carried up and away
- has few windows

Germinating room

- is big so grain can be spread out
- has lots of windows to aid ventilation

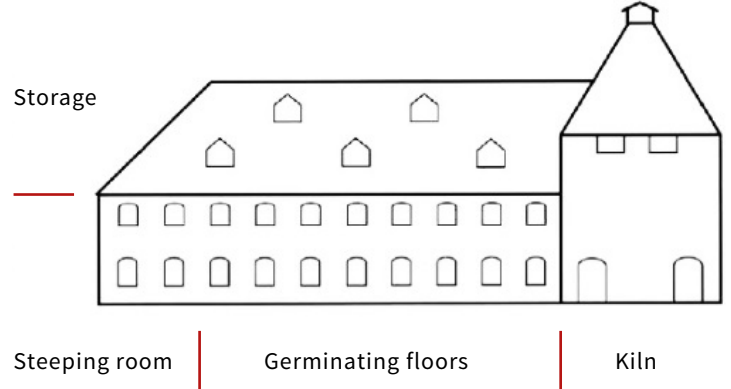
Storage space

- does not have many windows
- has a big door to get barley in easily, or malt out. This door may be several storeys up and have a hoist attached to lift sacks

Activity

Looking at maltings

Malthouse, Multi-storey pattern



Inside

Can you notice any of these inside?

Kiln

- hole in apex for air to escape
- is dark

Germinating floor

- very large floor space
- strong floor, usually concrete screed with quarry tiles on top
- pillars to support the floor above usually cast-iron for non-flammability and strength (damp barley weighs a lot)
- more pillars on lower floors than upper ones as storage floors above the latter need to carry less weight

Steeping room

- conical, square or rectangular vats

Storage space

- less solid floors than for germinating space
- hoppers
- a loading and unloading area