# KEY INFORMATION

**Raw materials used by SchapfenMühle**

**From ancient cereals to modern classics**

**The difference between husked and naked grains**

Cereals such as spelt, emmer, oat, barley or einkorn wheat belong to the *spelt cereals*. These are cereals with a firm husk around the grains. The husks cannot be stripped away by simple threshing, but must be taken off in the hulling mill. The process is known as dehulling. The grains that have been freed from the husks can then be processed further into flour, meal or flakes as usual.  
In contrast to spelt grains, *naked grains* come without a husk closure. This means that glumes and lemmas are not fused with the seeds. Naked grains include wheat and rye. The easy processing of naked grain is one of the reasons why wheat, for example, has replaced other cereals for many years.

**Ancient cereals – what does that mean?**

The term “ancient cereals” refers to age-old types of cereals that were cultivated long before industrial cultivation. These cereals evolved thousands of years ago from wild grasses, hybridising with each other spontaneously with no human intervention.

From about 10,000 B.C. our ancestors began to settle and cultivate the land. Aside from the so-called “founder crops” of pea, lentil and flax, emmer, einkorn and barley are among the oldest cultivated cereals.

“Ancient cereals” is not a protected term. Besides emmer and einkorn, ancient spelt varieties and perennial rye are also included.

Humanity's growing need for greater sustainability and proximity to nature, as well as a return to more traditional values, is leading to steadily increasing demand for these ancient cereal varieties. The increased cultivation of emmer and other ancient cereals strengthens biological diversity and so can be regarded as a form of active environmental protection.

**Spelt (bot. Triticum spelta)**

**History**

The oldest finds originate from Western Armenia and Eastern Europe around the 6th to 5th century B.C. In Central Europe, spelt has been cultivated since 1700 B.C.  
**Appearance**

Spelt is a spelt cereal. The spelt ear is loose, narrow and longer than that of wheat. The spelt grains are firmly enclosed by their husk. This cereal, cultivated once a year, grows roughly 60 cm to 150 cm high. The rhachis is long and thin, and the ripe spikelets visibly tilt.

**Products and baking properties**

Spelt flour can be used to make various types of bread and baked products, as well as spaghetti. Due to its high gluten and protein content, it possesses excellent baking properties. Spelt is also used to produce bulgur, semolina, “spelt rice” and even spelt coffee. Unripe harvested spelt is called green spelt; it is dried and only then dehulled.

**Nutritional values and characteristics**

Spelt ideally combines the benefits of a well-rounded diet, as it is rich in vitamins A, E, B1, B2 and niacin. The proportion of valuable fatty acids and minerals such as iron, magnesium, phosphorus and calcium is also higher than in other cereals. For some wheat allergy sufferers, spelt offers an alternative to conventional wheat products.

**Spelt and SchapfenMühle**

The first cultivation contract for spelt was signed by SchapfenMühle in 1987. With these many years of expertise in processing spelt behind it, it can now offer the very highest quality. This specialisation in ancient cereals, long before they appealed to broader public tastes and preferences, shows the pioneering role that the company has always played.

**SchapfenMühle offers the following products from spelt:**

* Spelt kernels
* Spelt rice
* Spelt flakes
* Spelt flour (Type 630, Type 1050, Wholemeal)
* Medium-coarse grain spelt flour
* Spelt semolina
* Spelt bran
* Spelt meal
* Puffed spelt, natural and coated
* CeralGran spelt
* Spelt mixtures for baking

**Emmer (bot. Triticum dicoccum)**

**History**

Emmer is one of the oldest cultivated cereals. As early as 10,000 B.C., it was cultivated in the so-called “Fertile Crescent” (today Southern Iraq, Northern Syria, Lebanon, Israel, Palestine, Jordan) and in Egypt. It was first cultivated in Germany around 5000 B.C. and from the Middle Ages onwards was gradually displaced by higher-yielding cereals such as spelt and soft wheat.

**Appearance**

Emmer is a spelt cereal. The mostly bearded crop ears sit atop tall stems and the emmer cereal grows up to 140 cm high and, therefore, higher than wheat or barley, for example. The black emmer varieties, which immediately catch the eye with their violet colour, are especially impressive.

**Products and baking properties**

Emmer flour is particularly suitable for making rolls, bread or pizza dough. It is also excellent for use in cake doughs, pancakes or waffles. Since emmer – in similar style to durum wheat – has a very hard grain, it is ideal for making pasta. Emmer flour has a low kneading tolerance. This means that when processing and kneading, the dough should be kneaded carefully on a low setting and only briefly on a high setting.

**Nutritional values and characteristics**

Emmer is a good source of protein and contains a higher amount of valuable minerals than soft wheat. Magnesium and zinc, in particular, are present in high concentrations. Emmer contains roughly twice as much beta-carotene, is converted to vitamin A in the body and is more important for the immune system than other types of wheat currently available.

**Emmer and SchapfenMühle**

By cultivating this almost forgotten type of cereal, farmers make a valuable contribution to species conservation and thus strengthen biodiversity. The cultivation of emmer can therefore be seen as a form of active environmental protection. Since 2013, SchapfenMühle has again been cultivating emmer in close cooperation with the region’s farmers. Our contract farmers are all located within a maximum radius of 20 to 30 km around Ulm’s milling location.

**SchapfenMühle offers the following products from emmer:**

* Emmer kernels
* Emmer flakes
* Emmer flour (Type 1300, Wholemeal)
* Puffed emmer
* CeralGran emmer

**Barley (bot. Hordeum vulgare)**

**History**

This grain is one of the oldest types to be cultivated. It originates from the Near East and the Eastern Balkans regions. Since the Neolithic Age (5,500 BC), barley has also been cultivated in Central Europe.

**Appearance**

Barley is a spelt cereal. An exception to this is naked barley. You can recognise them particularly well by the long beards found on their ears. The adaptable grain reaches a height of between 70 and 120 cm. The plant itself is smooth and hairless and the stem is erect.

**Products and baking properties**

Barley grains are baked into bread as part of the flour used or eaten as polished grains in soups. Roughly one tenth of world production goes into making malt, which is needed for brewing (malting barley) and making malt coffee. Whisky is also made from barley. The low gluten content makes baking with pure barley flour difficult. In combination with wheat or spelt flour it is also possible to bake bread that is characterised as “loose”. The use of barley groats rounds off the taste of bread.

**Nutritional values and characteristics**

Barley is rich in minerals like calcium and potassium.

Barley is the world's fourth most important cereal after wheat, maize and rice. It is cultivated as a winter and summer cereal. Spring barley is particularly high in starch and low in protein. It is primarily used for beer production as malting barley or processed into polished grains. The yields of winter barley are higher and the nutrients are favourable for use as animal feed. Newer winter barley varieties with high protein and fibre contents are only grown for human consumption.

**SchapfenMühle offers the following products from barley:**

* Barley kernels
* Barley flakes
* Barley flour
* Puffed barley

**Oat (bot. Avena sativa)**

**History**

Oats were first bred from around 2200 to 800 BC, but have been cultivated since the Bronze Age. In Northern Europe, cereals were the staple food of the rural population for almost 2,000 years until they were replaced by potatoes.

**Appearance**

Oats belong to the spelt cereals. The seed head is formed as a panicle and not as a spikelet. These panicles, which surround the kernels, have a bell-like shape and tilt slightly downwards during the growth phase. Cultivated once a year, it grows roughly 60 cm to 150 cm high.

**Products and baking properties**

Oats are a versatile grain: from oat groats, oat flakes and oat bran to oatmeal, cereals and drinks. Oatmeal can be used for making bread only to a limited extent due to its low gluten content. An oat content of 20 to 30 percent in bread is possible.

**Nutritional values and characteristics**

Oats are low in gluten and, at the same time, more nutritious than all other cereals. What is special about oats is the soluble beta-glucan fibre (4.5 g per 100 g). Beta-glucan has many positive effects on human metabolism. It binds liquid, creating a viscous mass in the gastrointestinal tract. This protects the intestinal mucosa and ensures a prolonged breakdown of nutrients in the small intestine, which has a positive effect on cholesterol levels, satiety and blood sugar levels.

*How does beta-glucan lower cholesterol levels?*  
In addition to water, oat beta-glucan also binds bile acids in the body, which are then excreted. Since bile acids are necessary, however, for the digestion of fat, among other things, the supply of bile acids must be replenished. During this process, cholesterol is “consumed”. As a result, the blood’s cholesterol level drops.

*Oats and celiac disease*  
Even though oats are particularly low in gluten, in the event of a sensitivity to wheat or gluten (and especially in the case of coeliac disease), they must be declared “gluten-free”, in order to be consumed. Those affected should also be symptom-free before consumption and should consult their doctor if necessary.

**SchapfenMühle offers the following products from oats:**

* Oat kernels
* Oat groats
* Oat flakes (coarse, fine, organic)
* Oat flour (Wholemeal)
* Oat bran

**Rye (bot. Secale cereale)**

**History**

The first evidence of rye stems from Stone Age strata. The oldest finds in Europe date back to around 1500 B.C. It has been cultivated in Germany since about 500 B.C.

**Appearance**

Rye is a spelt cereal. It can reach a height of 200 cm. The 8-16 cm long oblong ears bear two sets of flower heads (spikelets) along its stem (rhachis). The long ears and cereal grains are blue-green in colour. Rye is an undemanding cereal, characterised by its cold resistance, and is, therefore, mostly grown as a winter cereal. Old rye varieties (Herbaceous Rye) are perennial.

**Products and baking properties**

Especially in Central and Eastern Europe, rye is used as a bread cereal for rye bread or dark bread made from a mix of wheat and rye flours. In contrast to wheat bread or other wheat-based baked goods, the breads are characterised by a darker, firmer and aromatic dough. Rye semolina is also used to make pasta such as spaghetti.

The baking properties of rye flour differ in key ways from those of wheat flour. This is mainly due to the fact that the gluten (gluten protein) in rye dough is unable to build up an adhesive framework for gas retention due to the presence of pentosans (mucilage). Rye bread is, therefore, denser and darker than wheat bread. Rye has a high natural enzyme content, which is why it cannot be baked without adding acid. If there is a high rye content in bread, sourdough must therefore be added. The acidic dough environment inhibits enzyme activity and prevents the breakdown of starch, so retaining its water-binding capacity.

**Nutritional values and characteristics**

Rye grains are characterised by a high folic acid content of 140 µg compared to other cereals. They are also rich in vitamins B and E.

**SchapfenMühle offers the following products from rye:**

* Rye kernels
* Rye flakes (coarse flakes, organic)
* Rye flour (Type 997, Type 1150, Wholemeal)
* Rye meal (coarse, medium, fine)
* CeralGran rye

**Wheat (bot. Triticum aestivum)**

**History**

Common wheat is one of the oldest cultivated plants and came into being sometime between 7800 to 5200 BC through a hybridisation of emmer and goatgrass. Considered the most economically important type of wheat, common wheat is a staple food around the world.

**Appearance**

Common wheat is a naked cereal. It grows to from about 40 cm to 100 cm high. The stalk is thin-walled and hollow. There are three or five flowers per ear. On average, each ear contains about 35 to 45 grains.

**Products and baking properties**

Common wheat is used as a bread cereal for making bakery products and malt. Wheat bran, a by-product of the milling process, is used as concentrated feed in animal fattening as well as for food. The most important variety in Germany is naked wheat. It supplies the flour needed for bread, rolls, biscuits, sponge cake and cakes. Due to its high gluten content, wheat has excellent baking properties, which give it major advantages over other cereals.

**Nutritional values and characteristics**

There are over 1,000 varieties of wheat with differing requirements of soil and climate. Common wheat is the most commonly grown cereal in Germany and, after maize, the most important cereal worldwide. Every year, roughly 65 million tonnes of wheat are harvested worldwide. Cultivating it is demanding in terms of climate, soil and water supply. The nutrient-rich soils and temperate climate it requires lead to high yields through more grains on the rhachis and thus per ear.

**SchapfenMühle offers the following products from wheat:**

* Wheat kernels
* Wheat flakes (coarse flakes, organic)
* Wheat flour (Type 405, Type 550, Type 1050, Wholemeal)
* Wheat bran
* Wheat meal (medium, fine)