

Triticum

Gramineae
[*Poaceae*]

Triticum is a classical Latin name for ‘wheat’.

There are many species and varieties of wheat. They range from a gluten-rich hard wheat (suitable primarily for semolina, pasta and couscous) to soft wheat (that yields sprouted grains) and cracked wheat. Both soft wheat and cracked wheat are also ground to varying degrees of whiteness for flour which is then used to make bread, rusks, biscuits and pastries etc. Today wheat is featuring as an important part of vegetarian diets and some of the lesser known species and varieties (such as spelt, *Triticum spelta*) are making a ‘comeback’ for for instance brewing re-discovered types of beer or engendering interest in traditional breads or soups.

Wheat and other grasses [not least millet (*Panicum*), barley (*Hordeum*) and rice (*Oryza*)] played a significant role in the civilization of man. From about 10,000-3000 BC man as a migratory or nomadic gatherer, hunter and fisher slowly transformed at varying degrees and speeds in different parts of the World into farmer and animal (stock)breeder. This metamorphosis itself led gradually to the establishment of settled collectively-administered communities as crop irrigation demanded a fair watering system, and the exchange of seeds, tubers and animals between communities necessitated organization.

Some of the oldest known archaeological remains of wheat grains have been found at Jarmo, a village in eastern Iraq. These are said to date back to about 7000 BC and include two species of wheat still growing in the Near East today. It is known that grain (including wheat) was being cultivated in the Near East by at least 5000 BC and records of about 2500 BC show that by then the Sumerians in the eastern Mediterranean made eight different kinds of ale from the wheat that they were cultivating. The Egyptian tombs have also provided grain remains but these are younger and date from about 2500 BC. Similar archaeological discoveries from about this period have been made in India, while in Europe remains of wheat have been discovered in the Robenhausen Swiss Lake region which date back to about 8000 BC (the beginning of the Middle Stone Age).

Wheat was cultivated in Asia as well as the Mediterranean. Records of about 2800 BC – a period of much agricultural innovation associated with the Emperor Shen Nung (about 2800 BC) – refer to wheat as one of the Chinese five sacred cultivated plants – the others being barley (*Hordeum*), millet (*Panicum*), rice (*Oryza*) and soya (*Glycine*). Chinese ballads collected around 600 BC in the north-western highlands of China (for a ‘Book of Songs’ known as the *Shih ching*) tell of the wheat being brought inside in Winter. It was also grown further south as witnessed in a poem written in 3 BC on the joys of the rich man’s diet. China was importing delicacies from far afield from at least the Han dynasty (206 BC-220 AD) and eventually these included steamed wheat buns from India.

By about the time that Caesar Augustus (63 BC-14 AD) had become the first Roman emperor Rome was consuming 14 million bushels (equivalent to 112 million gallons or the harvest from several hundred square miles of fields) annually. Some of this was imported from Carthage on the North African coast which she had finally wrested from the Phoenicians in the previous Century – the famous eastern Mediterranean trading nation which itself had colonized Carthage in 9 or 8 BC and had developed there one of the richest

Mediterranean wheat-growing regions (500,000 bushels of wheat and 300,000 bushels of barley (*Hordeum*) had previously been extorted from Carthage by the Roman victors as tribute).

Meanwhile in Greece from about the 6th Century BC the wheat fields had been replaced by the olive tree (*Olea europaea*) in accordance with the regime of reform instigated by Solon (640 or 638 to 559 BC) the Athenian lawgiver, and most of the grain for both civilian and army use had to be imported. A large part of her supplies came from Sicily – until the Sicilians defeated the Athenian fleet in 413 BC at Syracuse after which the Greeks had to rely on eastern Mediterranean sources. And not that long afterwards even these were closed to her following unsuccessful Egyptian entanglements and Athens had to look to the Black Sea area for her wheat lifeline. (During this period the first item on the Agenda of each of the ten Assembly meetings held annually in Athens was to review grain stocks. It illuminates the importance of the crop to the Athenians who required the wheat hall at Piraeus to maintain sufficient stocks in the event that trading routes were cut by conflicts.)

International trade in the Mediterranean area was coming under increasing pressure. So far wheat had already acted as one of the catalysts in territorial expansion to acquire the space for farming but now in the Roman Empire it also provided an important spur in seafaring history. Rome imported grain from Alexandria that over land was a distance of 1000-mile ie. a 13- day trek with draught cattle often through hostile country. The same journey was far shorter (both in time and distance) over the sea so now the Roman Empire built grain ships, laid harbours and established yet another layer of administration.

One of the reasons why Rome needed so much wheat was that she ruled by it – it was given in free handouts to her citizens who became more and more dependent upon these. Various estimates suggest that a half to a third of the population ultimately relied upon this largesse. But senators and knights needed wheat as well and some of the importers were able to make no mean living out of importing the grain, even though it had to be sold at a relatively low price as it was competing with the free dole. The pyramid-like tomb of Caius Sextius that can still be seen in Rome today is a witness to this as he was an extremely wealthy grain wholesaler and importer of that period.

Unlike the Romans who apparently were not good at growing wheat themselves the Gauls in western Europe were and the Romans plundered their harvests too. Even when Charlemagne reigned (747-814) as king of the Franks and Christian emperor of the West, wheat was still the most important grain there [followed by rye (*Secale*), then barley (*Hordeum*), then oats (*Avena*)] – and the French were to remain the main cultivators of it in western Europe until the end of the 16th Century.

It seems that some authorities point to the remaining fragments of a report made by Pytheas of Massilia [then a colony – but today more familiar as France's largest port, Marseilles] (c. 380-c. 310 BC). This Greek geographer, navigator and merchant received a commission in about 330 BC to investigate the possibility of establishing a new trade route to the northern European tin and amber markets. He sailed north round the Iberian peninsular and his expedition report is believed to have included reference to wheat being grown in south-eastern England as well as the barns built there for threshing it. Once the Romans had occupied the offshore islands three to four hundred years later they encouraged wheat's growth there so that by 360 it was being exported from Britain to feed the Roman armies. However the grain was heading for a period in the doldrums in Britain. The fall of the Roman Empire early in the following century collapsed the size of the harvest and subsequent invaders preferred other cereal crops such as rye (*Secale*).

This is the stage at which other authorities on that period make their stand. Some of these

believe that wheat only began to be cultivated in Britain in the 7th Century – and then as a secondary crop to other grains which are believed to have predominated through even to the 17th Century (although the amount of wheat grown gradually increased over that time). The progress of wheat in Britain is not easily traced as historical references to ‘corn’ are usually an all-embracing term for grain as a whole and not wheat specifically as today. Wheat must have been used in part for making beer as from time to time it is mentioned specifically when its use for this is banned following a poor harvest. And in 1266 Henry III (1207-1272) decreed that wheat should be used as a standard of measurement for English coinage ie.

..... one English penny, called a stirling, round and without any clipping, shall weigh twenty-two well-dried wheat corns gathered out of the midst of the ear.

surely an indication of its importance in the Country at that point. (At the same time in Germany authorities note that rye was prized more than wheat, and in Bavaria, like England, wheat was often used to make beer.) Towards the end of the 15th Century England turned over more of her farmland to wheat so that she was surpassing even France in the amount exported. A bad harvest in 1596 caused a slight hiccup in this strategy – when the Country only side-stepped famine by importing the grain from Russia – but the following year she was back on course.

It is interesting to note that Europe unlike some other areas never knew the perils of black stem rust until about 900 AD. At that time barberry (*Berberis vulgaris*), with its attractive and useful red berries, is understood to have become a noticeable intruder in the wheat fields. It acts as a host to this fungus and the disease then spreads through the crops. The Spanish famines of 915 and 929 are only two of the dramatic series that swept through the Continent as a result.

16th Century Europeans introduced wheat to the American continents. Christopher Columbus (1451-1506) the Genoese explorer, took the plant to the Caribbean on one of his later voyages, the Spanish conquistadores introduced it to Mexico in 1529, and early English colonists are said to have taken it with them to Virginia in southern North America. But it was from the Spanish that the North American Indian Zuni tribe are believed to have acquired this plant and for them it became a staple food. They made their light bread which was baked in outdoor ovens in different shapes and they also cooked tortillas and, with Mexican know-how, doughnuts. (The North American Indian use of wheat is discussed in more detail a little later.) At the turn of the 16th Century the English explorer and settler Bartholomew Gosnold (1572-1607) is believed to have planted the first wheat in New England. Unlike the Pilgrim Fathers due there about twenty years later his wheat flourished without much problem whereas initially theirs suffered from what was probably black stem rust. In 1718 the first wheat was grown in the Mississippi Valley – the beginning of the grain’s progress across the centre of the Continent and its development towards a significant role in the Continent’s economy. In the last half of the 18th Century wheat (often as flour) was exported to Britain once the latter had lifted her import duty. The early 19th Century saw Thomas Jefferson (1743-1826) who was the Third President of the United States and a farmer who grew so many plants new to that Continent on his estates at Monticello in Virginia, doing his best to encourage better crops at the hands of his overseers. They received flour as part payment for their labour and he pitted them in competition by promising an extra barrel of flour to the man who obtained the best harvest. The next significant development was probably the Civil War of the mid-19th Century. (Although historians do not suggest that wheat was necessarily a deciding factor in this War’s outcome they do note its involvement and the convenience of some other related factors. In order to feed their army the North encouraged farmers

into the acres and acres of land in the middle of the Continent not least to grow wheat. The North's industrialized base was able to invent machines to aid cultivation and harvest – and as icing on the cake they had by chance Europe (England in particular) eating out of their hand which helped to fill the war coffers.) While the American Civil War raged Europe happened to be experiencing some poor harvests. The North exported wheat to Europe (especially England) and in 1862 alone she sent 400,000 bushels east across the Atlantic (four times the quantity exported so far, before by North and South combined). England had little option but to support the North because of the badly needed food (this at the expense of her Lancashire cotton mills which had relied on the cotton (*Gossypium*) that had previously been imported from the South).

In more recent times wheat has been an instrument in the major swings of World trade. From the end of the American Civil War (the late 19th Century) the United States saw vast areas of her land ploughed up (over 400 million acres by 1900). By then Europe was well in the throws of the Industrial Revolution combined with a population explosion that created many hungry mouths. Both the Americans and the Canadians (and Russia) now flooded Europe with cheap grain to meet this demand and although many poor people were thus able to afford bread, the influx led to various significant changes that occurred in a large number of western European countries. Not least of these was the destruction of farmers' livelihoods in Norway and many Norwegians emigrated to the United States from whence much of the grain 'flood' that had swamped them had come. In Denmark which also experienced devastation in her farming community new avenues had to be explored and the nation eventually emerged as bacon farmers. While in England production of grain had to be cut and acres previously set aside for this were reduced by one quarter.

Today the world's commercially grown wheat covers about one fifth of the globe's cultivated surface, and this acreage is about double the amount of land used to cultivate rice (*Oryza*) and four times that required for the present barley crop (*Hordeum*). Many different species and varieties of wheat exist and new ones are still being produced today (often with the help of genetic engineering). This latter enables plants to be raised that will meet the specific desires of farmers and consumers either without the use of fertilizers or with less fertilizers. But these developments may not always be beneficial. (There is now the possibility even of forming a perennial variety that would be likely to avoid the need for annual planting. This could create its own problems including the difficulty of weeding between the plants, soil exhaustion as crop rotation is diminished and the susceptibility to disease. The genetic arguments for and against are complex.).

Wheat was an important factor in the development of bread-making. It has been said that ancient Egypt contributed much to the modern art probably around 2900 BC when the first Pharaoh, King Menes, reigned as she began to grow a new form of wheat. This variety avoided the need to heat (parch) the grain before it was threshed and allowed the wheat gluten to remain elastic so that it could react with yeast to produce what many authorities believe was the first raised bread. (Some disagree however and think the first risen loaf was baked by accident when ale was inadvertently spilled into mixing water.) In addition to bread, wheat was also used for making ale and later frumenty. This last was made wherever the grain was grown and in the early days it tended to resemble a semi-liquid, white aspic. The texture developed over time so that eventually it acquired the solidity of a pudding that in Europe was used as a traditional accompaniment for venison. Early European settlers in North America made a form of frumenty from maize (*Zea*).

Quite a few North American Indian tribes used the grain for food including the Okanagan-Colville and some of the Navajo tribes, as well as the Zuni Indians already mentioned. It became a staple part of the diet of the Haisla, and Hanaksiala Indians and some of the

Keresan tribe – and wheat provided a cash crop for Cahuilla Indians who sold it to travellers in their territory. Zuni Indians used it to make a beverage, the Cahuilla and some of the Pomo and Tohono O’Odham tribes made ground grains into a porridge-like mush, and in addition to the Zuni Indians, the Hanaksiala, some of the Tohono O’Odham, some of the Apache, the Haisla and some of the Pomo tribes also ground the seeds for flour which they made into bread or cakes.

Some North American Indian tribes used wheat as fodder, not least some of the Navajo Indians who fed it to their horses. Others used it in a veterinary capacity. For instance the Iroquois included it as an ingredient in a mixture given to calving cows.

For the ancient Egyptians a green wheat-ear represented the deity, Horus. Wheat was associated with pagan earth goddesses and in the West the cereal used to be worshipped by some Europeans as the staff of life and it symbolized agriculture and the Autumn for them. A bearded wheat-ear was recognized by some as a sign of faithfulness and rejuvenating fire.

For Christians wheat is an emblem of both St. Walburga (c.710-c.779) [an English religious who is variously known as St. Walpurgis or St. Vaubourg] and St. Wenceslas (c. 907-929) who features in the well-known Christmas carol *Good King Wenceslas*. A white wheat ear is associated with Christ. The Eucharist is symbolized by wheat-ears with grapes (*Vitis*) for the bread and wine. A wheatsheaf signifies both death and fertility and is the symbol of harvest and Thanksgiving Day (celebrated in Canada on 2nd Monday in October, and in the United States on the fourth Thursday in November).

For Moslems when Adam was expelled from the Garden of Eden he carried wheat (chief of all kinds of food), dates (*Phoenix dactylifera*, chief of fruits) and myrtle (*Myrtus communis*, chief of all sweet-scented flowers).

Wheat features in heraldry quite widely. Among examples is the coat of arms for Afghanistan that depicts a circlet of wheat-ears. It also appears in the shield of the green and white national coat of arms of Pakistan, and a wheatsheaf is shown in the centre of the national coat of arms of Bolivia.

The production of wheat has engendered many customs. In England sowing the wheat could be dictated by several different old sayings such as

A wet and windy May
Fills the barn with corn and hay.

Then when the harvest was nearly in a corn dolly was fashioned from the last swathe (in which the corn spirits were believed to have hidden). It was adorned with marigolds (*Calendula officinalis*) and coloured ribbons and in some parts of the Country as a fertility ritual, and it would be urinated on as well. After it had been paraded home the corn dolly would preside over the harvest supper and be kept in the farmhouse until the following year to ensure a good harvest. When the crop came to be sown the dolly would be burnt in a ceremonial fire and the ashes ploughed back into the soil. In other localities the last sheaf was used to decorate the church font for the Harvest Festival. In Britain the corn dolly was sometimes known as Harvest Queen, and other local names included Harvest Baby (Kent), Mell Doll (Yorkshire), Kern Baby (Newcastle area) and Nek (Devon) and in Wales Hag. Today combine harvesters have nearly halted these customs in many countries although a few country areas still continue them and use a mixture of wheat and oats (*Avena*).

It is said that during Henry VIII’s reign (from 1509 to 1547) brides wore garlands of ears of wheat and (like confetti at some European and North American weddings today) it was scattered over their heads for good luck. Wheat used also to be thrown in the path of royalty and dignitaries such as mayors or magistrates, or over a new boat to launch it.

The straw has been used for thatching roofs and for making matting. Today it is attracting attention as a fibre source (left from food production) for manufacturing paper. Medicinally, herbalists believed eating green wheat caused worms. They did recommend the use of the bread for easing inflamed eyes and the flour was used in poultices.