

Barley



Barley is one of the oldest domesticated grain crops. It has been cultivated for over 8000 years. In Athens barley was the special food of the gladiators (the *hordearii*, or 'barley-eaters').

The interesting fact about 6-row barley is that it is only grown in North America. Its high enzyme concentration after malting is one of the reasons cereal adjuncts like rice and corn can be used without causing problems with mash conversion.

Barley grown for brewers malt is called malting barley, as opposed to feed barley, and is divided into two general types; 2-row and 6-row. The most obvious difference between a head of 2-row barley and a head of 6-row barley is the arrangement of the kernels when the head is viewed down its axis. In general, 6-row malted barley has more protein and enzyme content than 2-row malted barley, is thinner than two-row malt and contains less carbohydrate. There are also flavor differences between 2-row and 6-row and it seems that most brewers feel 2-row malt produces a fuller, maltier flavor and 6-row malt produces a grainier flavor in a finished beer.

Of the various cereals, barley has been adapted to the widest variety of climates, from sub-Arctic to sub-tropical. Barley is grown on a wide scale in Russia, Australia, Germany, Turkey and North America. Leading exporters are the European Union, Australia and Canada.

Though barley's energy is not as easily utilized by animals, it does have higher protein content than corn, which reduces the need for a protein supplement in a feed compound. Consequently, barley, although grown in smaller quantities, competes with both corn and sorghum as a feed grain in the United States.

Historically, livestock consumed most of the barley produced in the United States. This is no longer the case as food and industrial uses have shown continued growth while feed uses of barley have declined. The current breakdown is approximately 66 percent food and industrial use, 12 percent export use and 22 percent feed and residual uses.

Though two-row varieties are higher in test weight and kernel production plumpness, six-row barley has superior enzyme characteristics, which are crucial in beverage production. Brewers evaluate malt on the basis of total protein, soluble protein extract, fine/coarse difference, and enzymes used in beer making.

In 2007 Yuma County produced over 4,200 tons of barley on ~2,000 acres valued at just over \$0.5 million.

In about 1305, Edward I of England decreed that one inch should be the measure of three barley-corns, and English shoe sizing began; thus a child's shoe that measured 13 barleycorns became a size 13.

Historians report that up until the 16th century, it was the most important grain on the European continent. It was also used as currency and as a measuring standard.

Malt is produced by steeping barley (or other grain) in water until it germinates and then roasting and crushing it in a mill. It is used in brewing and distilling, and in malted milk drinks. Malt has a high protein and carbohydrate content. Any cereal grain (rye, wheat, rice, corn, etc) may be used to produce malt, but barley is by far the most frequently used. Malt for malted milk powder uses both barley and wheat.

Barley is one of the most ancient of cultivated grains. Grains found in pits and pyramids in Egypt indicate that barley was cultivated there more than 5000 years ago. The most ancient glyph or

pictograph found for barley is dated about 3000 B.C. Numerous references to barley and beer are found in the earliest Egyptian and Sumerian writings.

The origin of barley is still not known. There are differing views among researchers as to whether the original wild forms were indigenous to Eastern Asia, particularly Tibet, or to the Near East or Eastern Mediterranean Area, or both. Possibly in a crop so long cultivated this can never be resolved with certainty.

Half or more of the barley grown in the United States is used for livestock feed. As feed it is nearly equal in nutritive value to kernel corn. It is especially valuable as hog feed, giving desirable portions of firm fat and lean meat. The entire kernel is used in feed, generally after grinding or steam rolling.

Around 25 percent of the barley crop is used for malting in the United States. Of the malted barley some 80 percent is used for beer, around 14 percent for distilled alcohol products, and 6 percent for malt syrup, malted milk and breakfast foods.

For malting, the barley is steeped in aerated water in large tanks for 45 to 65 hours, and then transferred to germinating tanks or compartments where it is held with intermittent stirring for 5 to 7 days at temperatures of 60-70°F. During this treatment root sprouts emerge, but not the stems. This "green" malt is then dried in hot air kilns.

Barley for human food is made into pearl barley by using abrasive disks to grind the hulls and bran off the kernels. After three successive "Pearlings" or grinding operations all the hull and most of the bran is removed. At this stage the remaining kernel part is known as pot barley. Two or three additional pearlings produce pearl barley, in which most of the embryo is removed. These later pearlings also produce barley flour. Pot and pearl barley are used in soups and dressings.

Barley flour can be used in baby foods and breakfast cereals, or mixed with wheat flour in baking.

Barley was first discovered growing as a wild grass throughout Asia thousands of years ago. It was later cultivated and consumed by the Chinese as one of their first commercially-grown commodities. Egyptians and Greeks in ancient times consumed barley for medicinal purposes as well as for a nourishing food source. It is thought that this grain made its way to North America with Christopher Columbus on his journey to the New World.

Kurt Nolte is an area agriculture agent with the Yuma County Cooperative Extension. He can be reached at 928-726-3904.