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2024 #10

FROM HARVEST TO TABLE: Sorghum Beer

by Theresa Siebert

Sorghum beer is the fermented beverage prepared from malted sorghum grains and sorghum flour. Sorghum beer is unique in this respect, in that the sorghum grain serves as both the source of malt and carbohydrates for fermentation.

HARVESTING

Sorghum is harvested when fully mature to maximize the carbohydrate content for malting and alcohol production. Harvesting is done manually with a small knife or sickle. After harvesting, the plants are left with the heads exposed to the sun to dry. Drying is complete when the moisture content is reduced to between 10 – 12%.

If sun drying is not possible, the sorghum heads can be hung from structures or frameworks under a roof. If rainy conditions prevail, a fire made on the ground can dry the heads.

When dry, the heads are cut approximately 7.5 – 15 cm below the grain-bearing portion.

THRESHING

Threshing is done to remove the grain beads from the stalks. The most effective method is beating the heads with sticks on mats or cement blocks, or in sacks, or using a mortar and pestle.

WINNOWING

The sorghum kernels are cleaned using a winnowing basket to remove light grains, leaves, dust, and husks. Large foreign matter, including stones and stalks, are removed by hand. The clean sorghum kernels are inspected for signs of mould and removed as these impart an unpleasant flavour and colour to the product.

STORAGE

If storage is needed before further processing, the grain can be stored in bins provided they are clean, dry, and resistant to pests. A cool, dry storage environment is required. The grain should be inspected regularly during storage to make sure it is not infested. The storage container should be opened, and the grain lifted and checked for heating and odours. Look for any dark kernels that indicate that the moisture content is rising. If required, the grain should be tipped out and dried again before further storage.

STEEPING

The grains are washed to remove remaining foreign matter and to float off dry husks. After draining the wash water, clean water is added, and the sorghum is allowed to steep for 16 – 24

hours. Ideal water temperature is 20 – 27°C. The mixture is stirred occasionally, and the water may be changed once or twice. During the steeping, the grain moisture content is raised to 35 – 37%. This is necessary for germination.

GERMINATION

The steeped grains are transferred to germination boxes or rooms and spread out in layers of 12 – 20 cm thick. They are covered with wet sacks that are regularly sprinkled with water to keep the grains moist over a 4 – 6-day period. The surface on which the grains are germinated must be perforated (boxes) or sloped (floors) to drain off excess water. Germination takes place at temperatures of 24–30°C in 100% relative humidity conditions. Sufficient germination is when the plumule is 2½ cm long.

DRYING

The sacks are removed, and the sprouted grains are spread out in a thin layer to dry in the sun for 1 – 2 days. The grains that were germinated in malting boxes may be dried in the malting box by blowing warm air up, through the sprouts. The air temperature should not exceed 50°C. Drying terminates germination.

GRINDING

The dried sprouts are ground to give a fine powder that will pass through a 1 mm sieve. The flour is now referred to as malt.

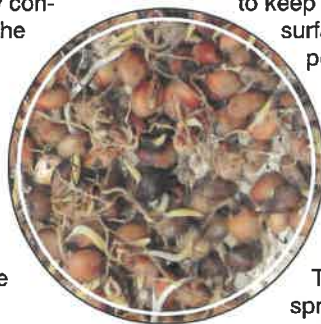
MIXING

The malt is mixed with sorghum flour and water to produce a mash that is ready for fermentation. A mash of 1 part ground sorghum malt, 3 parts sorghum meal and 9 parts water is commonly used.

SOURING

Souring is the first step in fermentation of sorghum for beer – it involves the treatment of the mash to promote the production of lactic acid by means of lactobacilli. Inoculation with a cryo-preserved culture of pure *Lactobacillus leichmanni* is used. Souring takes place in closed fermentation tanks at 45 – 50°C

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