

THE CEREAL BIN

by Theresa Siebert

Faced with the current economic realities, farmers worldwide are searching for new options of surviving, as well as expanding their business. One of the many opportunities to grow markets, turnover and profits, is by adding value to farm produce through further processing. Most value-added food products available to consumers have been processed in some way or other, even if the processing is as simple as cleaning produce before it is packed in plastic or net bags. Two types of processing methods may be performed on raw materials:

- Primary processing includes the simplest of processes such as washing, peeling, chopping, ageing, the milling of wheat for flour, and the processing of sugarcane.
- Secondary processing involves the conversion of primary processed products into more complex food products and includes procedures such as mixing, depositing, layering, extruding, drying, fortifying, fermentation, pasteurisation, clarification, heating etc.

Without the aid of food processing, we would not have the convenience of the large variety of food products available in supermarkets and other food outlets. Processing of raw products has several advantages:

- It allows for the year-round availability of food that has only a limited growing season or is not grown in certain areas due to soil and climate factors.
- Processing extends the shelf life of products, such as canned fish and UHT milk.
- Food processing improves the safety of our food supply through processes intended to destroy harmful bacteria and packaging helps in the prevention of spoilage and food tampering.

There are many cereal crops available for cultivation and just as many processing options for those crops; this article offers a small sample.

MAIZE

- Maize oil: the maize germ contains 34-52% oil. The oil is extracted firstly by physical separation of the germ from the kernel, and then chemically by means of solvent extraction. The oil is refined by various treatments to produce edible oil of high quality that can be used for frying and baking.
- Maize syrups or glucose sweeteners are manufactured from the starchy endosperms of maize by using a conversion process known as hydrolysis. The hydrolysis process can be chemical (by means of strong acids) or enzymatic or a combination of the two. Various types of maize syrups can be produced, depending on the processing conditions and hydrolysis agents used.
- Alcohol is produced through a yeast fermentation process. Starch is firstly converted to sugars and the sugars are then converted to ethanol and carbon dioxide in the presence of water by the action of specific yeast cultures.

OATS

- Rolled oats is the main product of any oat processing plant. It is produced by flattening groats (de-hulled oats) between rolls under heavy pressure. The groats may be cut prior to rolling to achieve rolled products of varying thickness. Rolled oats is consumed as a hot breakfast cereal that requires cooking.

- Oat flour is the milled, flour product from hulled oats and is used in baked products, granola bars, and ready-to-eat breakfast cereals. It is especially valuable in infant foods due to the high nutritional value and low allergenicity and pleasant flavour. It is widely used as one of the first solid foods introduced to babies, or as thickener in various commercial infant products.

RICE

- Canned rice is a convenience product which preserves cooked, ready-to-eat rice in a hermetically sealed can or metal pouch. There are basically two types of canned rice products available today: wet packs, and dry packs. Wet packs contain the rice in an excess of water, brine, or broth. Dry packs contain no added liquid or excess moisture. The product is free flowing from the can and is prepared for serving by heating in boiling water or in the microwave oven.
- Oven puffed rice products are popular ready-to-eat breakfast cereals. Oven puffed rice may also be used as ingredients in granola and various confectionary products to provide a crunchy, chewy character.
- Parboiled rice involves partial cooking of rice which in its hull (rough rice/paddy), straight after harvest, prior to drying and refining. Parboiling has significant effects on the characteristics of the rice.

SORGHUM

- Sorghum malt is dried cereal obtained from germinated sorghum kernels; it is primarily used for the brewing of sorghum beer.
- Sorghum beer is the beverage obtained by microbial souring and mashing of sorghum malt followed by a process that removes coarse material. The liquor that is obtained (called the wort) is then subjected to alcoholic fermentation. The final product is transparent, pinkish brown in colour, with an acidic taste.
- Sorghum flour is a staple food that has a high domestic demand. It can be used for small-scale production of bakery products, snack food, and as ingredient in the production of other foodstuffs.
- Popped sorghum is a crisp, white, expanded grain snack made from sorghum kernels in much the same way as popcorn. It is much smaller than popcorn, about 0.5cm in the expanded form, which is understandable given the smaller size of the sorghum kernel. Popped sorghum has a sweet taste with the typical sorghum aroma.

WHEAT

- Partly baked bread and rolls are used in hot bread shops, in-store bakeries, catering establishments and being sold directly to the consumer who then bakes it prior to consumption. The part-baked product can be frozen or sold direct as is to the trade and consumers. The unfrozen product has a limited shelf life.
- Couscous is a traditional African dish made of coarse wheat flour (semolina/farina) with an appearance like broken rice. It is prepared by mixing with water to form a dough that is then cooked/steamed. Cooking can be performed over broth, often with meat or fruit added.
- Fresh noodles are thin strips of pasta that is made from ordinary wheat flour and not from semolina as is the case in other products. The final (fresh) product has a moisture content of 32% while the dried product has a moisture content of 8-10%.



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