CerealVeneta
CEREAL, SEED AND PULSE PROCESSING

Our Pubblications, Blog & Media

Article prepared by the ***CerealVeneta R&D Department.*** Our commitment to scientific and technological research is aimed at ensuring the ongoing improvement of the processes, products and solutions we offer.

IN FARMING FOCUSSED ON CHANGE, PEOPLE ARE TALKING ABOUT

SORGHUM

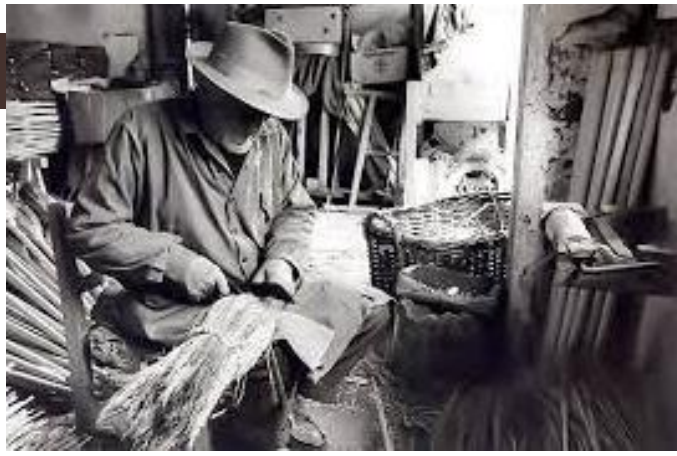
Giuseppe Tirelli
Sorghum field and peasant woman
Giuseppe Tirelli (Reggio Emilia 1859 – 1931)
oil on cardboard

SORGHUM *(Sorghum vulgare Pers.)*

IN recent decades, the cereal **Sorghum** has been absent from national crop planning and consequently doesn't appear on our dining tables or in our diet. Yet today sorghum and its properties have become a prominent topic all over Europe.

Record! Despite the lack of interest shown by farms in Italy, sorghum ranks as the world's 5th most widely produced cereal, after rice, corn, wheat and barley. And in the near future, it could become a "star crop" because of its special "green" characteristics. **Sorghum** *(Sorghum vulgare Pers.)*, is an annual herbaceous plant. In its food crop varieties it reaches a height of 150 cm, while wild varieties may exceed 250 cm. In appearance it resembles corn or a sturdy millet plant.

Origin and diffusion



Originally domesticated in Africa, today it's grown around the globe, from Asia to Europe, America and Australia. In fact, **sorghum is a capable of adapting to diverse and particularly hostile environmental conditions.** This is thanks to its special root system which, by capillary action, intercepts and retains even minimum quantities of water, coupled with its optimum growing temperature range of around 30-35°C, meaning it can be cultivated even at tropical temperatures.

The grain of the common white variety is used for human consumption, while red sorghum and other varieties known as "sorghum" in the West are currently used as fodder plants or destined for other uses such as the production of biomass. In some rural areas the plant's bristles are also used for making brooms.

«Green» cereal

Known also by the nickname **"the camel of crops"** because of its ability to thrive on limited water and thus its reduced environmental impact, from an agricultural standpoint, sorghum is an undisputed champion. It takes an average of **936 litres of water** to produce **one kilo of sorghum** (depending on variety).

By contrast, to produce just one kilo of rice, the "watering-devouring" cereal par excellence, it requires a whopping **2,497 litres of water**. So it's immediately obvious that sorghum is an important alternative from a nutritional point of view, especially in gluten-free diets, but equally so from an environmental standpoint. **Sorghum is a "green" plant!**

Nutritional Information

Nutritionally, the grain is made up of **70% carbohydrates, 5% fibre and 10% protein**. It's rich in B vitamins and antioxidants. It's also a source of minerals such as phosphorus, magnesium, calcium and iron. It's low in fat and naturally **gluten-free!** Sorghum is the third most widely used gluten-free flour in the world, as well as qualifying as a valid green alternative to the most common water-intensive crops, namely, rice and corn. The sorghum endosperm has a **slower digesting starch profile** than other cereals, which contributes to slowed gastric emptying and may thus benefit satiety and weight management. In addition, the diversity of phytochemicals in sorghum, especially the polyphenols, have been linked to various health benefits, including improvements in glucose metabolism and reduced fat accumulation *(Audrey L. Girard, 2018)*.

NUTRITIONAL

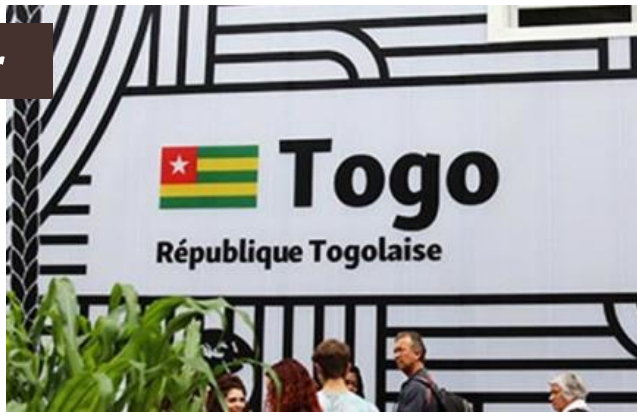
Calories	340 kcal
Protein	10.0 g
Carbohydrates *of which sugars*	67.5 g *2.0 g*
Fat *of which saturated*	2.8 g *0.4 g*
Fibre	6.3 g

Mineral salts	
Iron	3,36 mg
Calcium	13 mg
Sodium	2 mg
Potassium	363 mg
Phosphorus	289 mg

Water-soluble vitamins	
Vitamina B1	0.33 mg
Vitamina B2	0.09 mg
Vitamina B3	3.68 mg

The values are for 100 g of raw decorticated edible part.
** The analytical and product information given above are not binding as they may vary slightly between batches of raw material that is processed at different times.*

Milano EXPO 2015: *Sorghum bicolor*



Recently, sorghum rose to prominence during **Expo 2015 held in Milan** thanks to the Togolese Republic, which chose this international event to showcase sorghum. In particular they highlighted the characteristics of the variety ***Sorghum bicolor***, garnering much interest, success and fame. Togo further emphasised how this cereal represents a staple food for many countries in the southern hemisphere and is pivotal to developing agricultural economies.

In Togo, for example, sorghum flour is used to produce a pasta which is typically seasoned with sauces based on tomatoes and legumes. The **grain from white sorghum**, on the other hand, is used in many recipes, and when boiled is excellent consumed hot or cold in soups and salads. The flour obtained from white sorghum is ideal for use in myriad recipes.

A *gluten-free* cereal ideal for celiacs

Pasta and noodles can be produced with 5-100% sorghum, at pilot, laboratory or industrial scale, with suitable cooking times, textural quality coupled with distinctive sensory attributes.

Cooking loss shows minimum values of 0.85 and 1.9 g/100 g for pasta and noodles respectively, and high water absorption (up to 345 g/100 g).

This cereal also has a low glycaemic index (below 65), meaning that it's digested more slowly and that consequently sugar release is slower and more gradual – a feature that makes it ideal for diabetics, but also for those wanting to avoid the typical drowsiness felt after meals. This is especially important for celiac sufferers. and provides them the alternative of using gluten-free sorghum pasta and noodles *(Palavecino, 2020).*

In Italy, until a few decades ago, **sorghum polenta** was the "bread" of the peasants in the area of Rovigo, and in the driest rural areas it was typically added to soups with legumes to make a hot meal. Today, sorghum is grown mainly in Emilia-Romagna and in central regions such as Marche, Umbria and Tuscany. In 2006, the National Research Council (CNR)[1] conducted studies into sorghum to explore its potential for improving the lives of celiac sufferers.

A few years into the studies, conducted by the research group coordinated by the geneticist Del Giudice2, the "White Sorghum supply chain as a gluten-free food for celiacs and better health for all" was launched in Campania, and has enjoyed so much success it's now possible to order sorghum that's certified **Made-in-Italy!**

The time has therefore come to rediscover this nutritious and bountiful cereal, also for the global interest it's arousing regarding celiac disease and its health benefits.

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[1] National public research body with multidisciplinary skills, supervised by the Ministry of Education, University and Research (MIUR), founded in 1923.

[2] https://www.lap-publishing.com/catalog/details//store/gb/book/978-3-330-04405-0/sorghum-grain-as-human-healthy-nutritious-cereal