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Sorghum Flour as a Substitute for Wheat in El Salvador Village Bakeries

INTSORMIL

"I use sorghum flour as a substitute for wheat in my bakery because it increases my profit"

Sorghum flour based baked goods produced in the village bakery of Ms Clemencia Barrera in Canton Jiboa, Municipio San Rafael Cedro, El Salvador

"The advantages of using sorghum flour in baking as a partial replacement for wheat are its low cost, nutritional qualities, appearance and the fact that it is a 100% salvadoreña product thus minimizing wheat imports"

Grain sorghum is generating new excitement on the health food scene. Why? For one reason, flour milled from grain sorghum has NO GLUTEN! That's important to those people with an intolerance to gluten-containing products (Celiac disease). Sorghum is high in antioxidants (cancer prevention) and insoluble fiber (slowly digested), with relatively small amounts of soluble fiber. The protein and starch in sorghum endosperm are more slowly digested than other cereals. The slower rate of digestibility of sorghum products may be beneficial to diabetics.

So how is sorghum flour used in baking? It can be substituted for wheat, rice or soybean flour in a wide variety of baked goods. Its bland flavor and light color does not alter the taste of finished products.

The value of sorghum flour in baking has been known for many years in El Salvador. In fact, Clemencia Barrera (in photo below) is one of about 150 small village bakers in El Salvador

Clemencia Barrera, with baked goods just removed from the oven

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who uses sorghum flour as a substitute for wheat flour. According to Clemencia, "I use sorghum flour as a substitute for wheat in my bakery because it increases my profit." Clemencia's profits are about US$ 40 per week which is good in El Salvador villages. In addition, sorghum flour is versatile and can be used for a wide range of baked products, is nutritional and has excellent physical qualities. It is also about 24% cheaper and the price is more stable than wheat flour. But most importantly, it is a 100% salvadoreña product, thus minimizing the need for wheat which is not locally grown and must be imported.

Clemencia bakes a variety of products including French bread, buns, rolls, quesadillas, semitas, muffins, cakes, rosquete etc. in a tin roofed room next to her house in Canton Jiboa, Municipio San Rafael Cedro, El Salvador. She bakes on Monday, Tuesday and Friday and sells her bakery products in small kiosks in the community. She has been baking for 20 years and has been using sorghum flour as a substitute for wheat for 15 years. The ratio of sorghum to wheat flour depends on the product. For French bread she uses 25% sorghum flour, sweet breads 50% and for cake up to 100%.

In support of the local bakery industry, CENTA (Centro Nacional de Tecnologia Agropecuaria y Forestal) with INTSORMIL cooperation is studying the use of sorghum grain in the production of flour for the bakery industry. The CENTA sorghum breeding program, in cooperation with the CENTA Food Technology Laboratory, breeds sorghum varieties that produce sorghum flour with the physical and chemical charcteristics needed to replace imported wheat as a source of flour. Characteristics taken into account are (1) color, (2) protein content (3) hardness and (4) absence of tannins. Varieties of sorghum developed for human consumption by CENTA are RCV, SOBERANO, JOCORO and CENTA S-3.

CENTA works closely with millers and bakers in providing guidance for the milling and baking process. In assistance to bakers the Food Technology group has determined the flour particle size and the ideal ratios of sorghum flour to wheat flour required in the different bakery products. These recommendations are available in the form of a guide.

The CENTA program is continuing to work with millers and bakers in the development of new sorghum varieties with enhanced starch and protein digestibility, increased lysine content, improved microstructural qualities and improved starch molecular structure. With the assistance of the CENTA/ INTSORMIL Program the future for increased use of sorghum flour in El Salvador is bright.

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