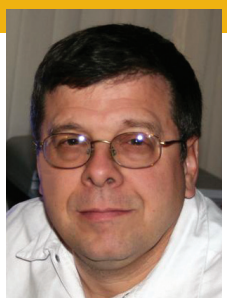

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Quality of a Baked Good—What Makes It Good?

This issue of *Cereal Foods World* focuses on product quality. On the manufacturing side, for the last several years quality has been equated with "food safety" or "good for you." You don't often hear the question "What makes a top quality product?" I was recently asked by a global brand to make the best possible chocolate chip cookie. That got me to thinking—what makes a top quality baked product? I thought I would take this opportunity to make some suggestions and point out some critical aspects of what makes a product good, as in yummy.

Richness is a word you don't often hear anymore in descriptions of baked goods, but it is associated with quality. Formulating a "rich" product typically involves the use of higher levels of fats (e.g., butter, shortenings, oils, whole eggs, and egg yolks) and sugars (e.g., granulated white, brown, painted and boiled, honey, molasses, maple syrup, fructose, and corn syrups). However, when you are talking about top quality products, you are also talking about fresh products, and a longer shelf life is desirable (e.g., 4 days versus 2 days). Richer products freeze well, potentially extending their shelf life. For products sold in grocery stores, where 6 months on the shelf is the standard, however, richness does not necessarily extend shelf life due to oxidation of the higher levels of fats and higher water activities. Perhaps this is one reason we don't hear much about the "richness of products"—these types of products aren't as widely available because of their shelf-life limitations. Unfortunately, richness also typically means more calories, yet another reason we don't hear as much about top quality products and richness these days. Moderation is the key when consuming rich foods—savor the experience and the flavors.

Another measure of product quality is higher levels of inclusions and inclusions as larger pieces. Larger pieces often require special equipment for handling and processing, and there is frequently a wider variation in weight control due to variation in the number of inclusions from one cookie to the next, for example.

For fruit fillings that are processed for use in pies or pastries, specialized gentle-cooking equipment is required to avoid destroying the fruit identity. Expertise in determining when the matrix is cooked enough and when the fruit should be added is also needed. Finally, a knowledge of the types and varieties of fruits that will hold up during cooking, provide the desired flavor, and have the proper ripeness is also key.

Each area of baked goods has its own aspects of what makes a top quality product. Most aspects go beyond formulation and require special techniques to handle them. I call this craft. The other common thread is knowing the proper flour to use in a product. In many baked products, flour is the key to making a top quality product versus a so-so product. I worry that some of the craft and knowledge of flours and ingredients is being lost as bakers who began their careers before the emphasis on health and good-for-you products start to retire.

Specific Products

Breads, Rolls, and Yeast-Raised Pastries. The range of products in yeast-raised goods is vast. Handling during mixing, fermentation, proofing, and baking, and, in some cases, storage after baking make a huge difference in product quality. One thing most bakers agree on is that the more fermentation a product receives the better the flavor. To a point more fermentation can also improve storage quality by hydrating the flour more. Sponge and dough systems allow for longer fermentation and more flexible processing times.

In bread and roll formulations, the choice of flour is key. Choosing a flour that is too weak can spell disaster, as can a flour that is too high in protein. The flour needs to match the product requirements. For example, you don't want to use a high-gluten flour for a Danish or pastry flour for a hearth bread. For Danish and other laminated doughs, the roll-in (butter being ideal) and the amount of roll-in makes the difference between a good product and a top quality product. However, use of higher levels and/or butter creates the need for more careful handling.

Cakes. Cake quality depends on the type of cake and the desired finished product. For example, creating a quality angel food cake from scratch is tricky because of the amount of air that must be incorporated. A quality scratch angel food cake requires fresh egg whites, a top-notch cake flour, and the craft to know when the egg whites have been whipped to the right consistency before adding the sugar and then the flour, without overmixing the batter after the flour has been added. You can tell the difference between a scratch angel food cake and one from a mix by the flavor. Angel food cake made from a mix will have a bit of an acidic aftertaste and will often be a little tougher.

Layer cake quality made a big jump forward with the development of bleached cake flour and emulsified shortening. These innovations allowed for the development of high-ratio cake formulas versus low-ratio formulas. Ratio refers to the ratio of sugar to flour, termed "baker's percent." Prior to these developments the amount of sugar could not exceed 100% or more than the weight of the flour in the formula. This resulted in drier, denser cakes. Levels of sugar higher than flour can be used with bleached flour, and in combination with a lower pH,

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lower gelatinization point, lower levels of very good quality protein, and emulsified fat, these formulas can carry more water. This results in fine-grained and more moist and tender cakes. There are several excellent cake shortenings on the market for use in scratch high-ratio cakes. They typically contain propylene glycol esters of monoglycerides, lecithin, mono- or diglycerides, and/or polyglycerol esters.

Cookies. For the most part, the quality of a cookie and whether it is soft or crisp is determined by the raw ingredients, such as real butter and eggs (liquid or dry), and fresh ingredients used and the level and quality of inclusions. Usually more inclusions are better, even if they aren't the best quality. In a good chocolate chip cookie, at least 20% of the total formula is chocolate chips; a top quality formula contains more than 30% chocolate chips. Compound chips have improved immensely over the years, but because they can't have chocolate liquor in them, due to fat incompatibility, they still do not have the deep, rich flavor of real chocolate. In addition, too high of a level of dextrose, over 5%, in chips will make them chalky after baking. There is also the ongoing debate over which is richer—dark semi-sweet chocolate or milk chocolate. This is a matter of personal preference, and I have seen both succeed in the marketplace.

A higher level of inclusions requires a more specific formulation to make a cookie that can be deposited through a machine. The dough needs to be cohesive, or sticky, enough to hold the inclusions together as they go through the machine.

Cake Doughnuts. Doughnuts are unique in that the cooking medium, frying fat, becomes part of the finished product. Both the doughnut formulation and the frying fat need to be considered. Cake doughnuts are among the most complicated products in a bakery. Virtually all doughnuts are made from a mix because they are so sensitive to ingredient fluctuations, especially flour. An indicator of a properly made cake doughnut is the shape of the hole. Ideally it should be a "star" shape with points of batter extending into the hole. If the hole is large and round, it is the result of too much water having been added to the mix.

The amount of fat a doughnut absorbs corresponds to the amount of water in the batter. During frying the fat heats the dough, causing the water in the batter to evaporate out (the source of all those bubbles you see when frying a doughnut), the fat is then absorbed by the dough, replacing the moisture that has evaporated. Fat absorption has a bearing on the flavor and quality of a doughnut and has a larger bearing on flavor depending on the condition of the frying fat. The higher the level of free fatty acids (broken-down fat) the higher the fat absorption. Even if you can't taste the broken-down fat, you will be able to see it. The doughnut will have a yellowish tinge to it wherever the fat is absorbed and will be darker in color on the outside. It will also harden faster as it sets. The best way to ensure a good cake doughnut is to follow the directions for the mix, weigh the water, mix for the proper amount of time, and achieve the proper dough temperature. As long as the condition of the frying fat is good, the doughnuts will come out wonderfully.

Yeast-Raised Doughnuts. Yeast-raised doughnut quality is more dependent on handling than anything else. A rich formula can be ruined if the product is over-fermented or -proofed before frying. Flour again plays a key role in the formulation. The flour should match the richness. Typically a blend of hard and soft wheat flours or all hard wheat flour with a moderate protein level works well, especially if you have higher levels of shortening and sugar in the dough. Proper proofing makes a huge difference in the fat absorption of the doughnut. Over-proof and the doughnut will blister during frying, giving the fat a place to enter the doughnut. A properly proofed and fried yeast-raised doughnut will have what in doughnut frying circles is called a "skunk ring"—a white line that goes around the middle of the doughnut. As the doughnut is fried, the gases inside the dough expand giving the doughnut more buoyancy and, thus, the middle is not immersed in the fat during frying and does not brown.

Moderation and Finding Quality Products Are Key

Too often we choose products based on price, volume, and convenience, all the while worrying about the calories we are consuming. I know I am guilty of this. Enjoying a higher quality product in more moderate amounts may be a more satisfying eating experience, both from a flavor and texture standpoint. The challenge is to find those top quality products. The easiest place to find them is at your local retail bakery. Unfortunately, there are fewer and fewer of these bakeries around and fewer still with bakers who have the special knowledge required to make these higher quality products. How do we turn this tide? Create demand! First, we the consumers need to know what to demand. Hopefully this article gives readers a little of that knowledge.