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# Sensory Analysis of Chocolate Liquor

***Sophisticated sciences such as sensory and flavor chemistry are needed to understand flavor development.***

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Flavor is the most important organoleptic property of a food: if food didn't taste good, people wouldn't eat it. Human beings use all five senses to perceive flavor. The most important sense used to describe the flavor of a food is taste. The basic sense of taste uses receptor cells, which are located within our tongue's taste buds and are able to perceive all five basic tastes. The scientific disciplines of sensory science and flavor chemistry use experimental design and the human senses to aid businesses in making educated decisions about their products; therefore, it is important that food manufacturers—such as confectioners—strive to control all variability in their raw materials and processes, so that they may produce finished products with consistent flavor. Sensory testing in the form of daily tastings of both semi-processed and finished product can assure manufacturers that their products meet specific flavor requirements.

Cocoa beans from the tree *Theobroma cacao* are a very complex raw ingredient. The complexity of the cocoa bean's flavor still mystifies chocolate manufacturers and flavor chemists today. Currently, more than 500 flavor compounds have been identified from cocoa products, and identifying the source of each of these flavors is a science in itself.

Each lot of cocoa beans should be eval-

uated for flavor prior to processing because the reproducibility of consistent flavor may vary greatly from lot to lot. Confectioners should never take for granted that their cocoa beans have been harvested, transported and processed precisely the same as they have been in the past; therefore, manufacturers have to be able to adapt and adjust formulations to avoid undesirable changes in the flavor profile of their finished products, which makes chocolate and cocoa powder manufacturing somewhat of an art.

## **FACTORS THAT AFFECT THE FLAVOR OF COCOA BEANS**

The flavor of the cocoa bean and its liquified state—known as *chocolate liquor*—can be dissected based upon origin practices, shipping and storage environments, and processing conditions. At origin, the growing season, weather during harvest and farming practices can all affect the quality of cocoa beans. It is believed that the *safra* (main crop, approximately October through April), produces a better quality bean than the *temporão* (mid-crop, approximately May through September). Mid-crop tends to produce beans with higher mold levels, and the beans tend to be smaller, lower in fat and of lower flavor quality versus main-crop beans; thus, chocolate manufacturers prefer ➤



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