The ability to measure shelf life accurately is important to food manufacturers. The shelf life of a product can be defined as the time during which a product remains safe for consumption and at a quality level that is expected in terms of its overall performance. The most important quality parameter driving product acceptance by the consumer is, of course, sensory quality, relating to the appearance, texture and flavor attributes of the product. However, another important consideration to be taken into account is whether the product composition at the end of shelf life still satisfies the labeling requirements, e.g., vitamin level in fortified confectionery. Therefore, shelf-life can encompass many different aspects of product performance.

The measurement of shelf life requires first that all the changes that occur during the storage of a product are clearly understood. Based on this information the critical factors that limit the shelf life of the product can be identified and the critical levels of change causing a product to become unacceptable can be determined. However, in many cases it can be difficult to define the end point for shelf life. A level of change that an individual deems to be unacceptable may still be acceptable to another. The shelf life set for a product is based on data produced by trained scientists with an experienced eye who assess particular changes in products. A long-standing argument is whether the level of change is one that will be recognized by a consumer. A good example of this is in the assessment of fat bloom on chocolate. Fat bloom is caused by the growth of fat crystals on the surface of chocolate. Bloom assessment is carried out both visually for loss of gloss, and by examining chocolate samples under a low-power microscope for signs of fat crystallization. Often, fat crystals can be seen clearly under the low-power microscope. The size and distribution of fat crystals can be determined by a scientist studying the samples, but the question is whether the bloom has developed to a level that can be seen by a consumer. If for a product bloom development is a critical factor affecting shelf life, the judgment of individual assessors setting the cut-off points for bloom is extremely important. In such cases, you may argue that the judgment on level of bloom, since it is based on experience, is more of an art than a science.

Shelf life can be determined scientifically but must always be related to the consumer’s expectations. Translating consumer expectations of quality into scientific para-