

ADVISORY STATEMENT:

SHELF LIFE OF FRESH-PACK CUCUMBER PICKLES

by

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What is the maximum acceptable shelf life of fresh-pack pickles? This question, which has been asked by the pickle industry for years, is particularly relevant in the present economic climate and has commanded a current resurgence of interest. Shelf life guidelines among companies may be flexible because of timing problems which may result in a compromise of product quality or marketing strategy. With proper processing and storage of products and with reasonable marketing planning, such compromises can be minimized. Although there may be no consensus on maximum shelf life of fresh-pack pickles, scientific information is available which may be useful in forming guidelines based on product quality. Some of this information is summarized herein. Relevant references are listed at the end of the text and are referred to parenthetically in the text.

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Shelf Life is Determined by Consumer Acceptance

The shelf life of pickle products and other acidified foods is dictated primarily by consumer acceptance of the product. Such products, if properly acidified, do not present a significant public health problem and so safety is not a major issue. Consumer acceptance of pickles is greatly influenced by product quality, whether the product is purchased by an impulse buyer or a hard-core pickle lover. Appearance, texture, and flavor are the primary quality traits that influence acceptance of pickles. Any of these traits can be a reason for acceptance or rejection, so all three must be controlled. Appearance is especially important in glass-packed products such as pickles and may dictate whether the product is purchased. Texture, which includes crispness, firmness, skin toughness, etc., may dictate the extent of repeat sales. Flavor is formulated for regional preferences to some extent, but inconsistent and off flavors can greatly influence repeat sales. Appearance, texture and flavor are all influenced by processing and storage conditions and can be controlled with the aid of an effective quality assurance program.

Raw Product, Processing, and Storage Affect Shelf Life

The quality of fresh-pack pickles is influenced largely by raw product quality (1, 2), blanching treatment (3), cover brine composition (4, 5, 6), time and temperature of pasteurization (7, 8, 9, 10, 11), time and temperature of storage (9, 12, 13, 14), and exposure of the finished product to light.

Numerous secondary variables also have an influence. The scientific information is insufficient to predict the effects of all these variables on shelf life. We do know, however, that time and temperature of processing and storage are two of the most important factors which influence the quality of foods in general, including pickles.

Guidelines for time and temperature of pasteurization of fresh-pack pickles, which have been in general use for about 40 years, specify that the internal-product temperature reach and be held at 165°F for 15 minutes, followed by rapid cooling (6, 7, 8). This treatment is sufficient to prevent microbial spoilage but not so drastic as to seriously harm texture of the pickles. A safety margin is included in this process. Lesser heat processing treatments can be used that may result in improved shelf life from the standpoint of texture but with increased risks of spoilage. Excessive heat processing will only result in lowered shelf life of the product, particularly from the standpoint of texture, and wasted energy. Other combinations of time and temperature can be used to give a satisfactory process but should be tested before employment in full-scale production.

Time and temperature of storage of the pasteurized product have a great influence on texture and other quality traits of pickles. Shelf life of the pickles can be widely manipulated by the temperature at which the product is held. Properly processed products can be held for 10-12 months without serious

loss in quality if the product is quickly cooled after processing and held at about 70°F. Shelf life can be extended beyond 10-12 months if the product is held at lower temperatures, but will be shortened if the product is held at higher temperatures. Some references (9, 12) indicate that shelf life can be doubled for every 18°F below 70°F or will be halved for every 18°F above 70°F that the product is stored, but too many variables exist for these guidelines to be taken as absolute.

Management Decisions

Ideally, it would seem that pickle products should only be held for a maximum of 10-12 months, or until the next processing season. In practice, however, management may be concerned with insuring adequate inventory for continuity in supplying a product. Conversely, proper storage space limitation, product shelf life, and high money costs tend to disfavor a large inventory. With present high interest rates, one might question the wisdom of carrying products beyond one year. In any case, management has options for regulating the shelf life of products. Assuming proper raw product quality and processing procedures, shelf life can be manipulated by controlling storage temperature. Also, by proper monitoring of product quality during storage, individual companies can establish more precise guidelines for product shelf life under their specific conditions.

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