



## Outwitting The Olives

**SOFTENING** - The problem of softening olives is complex and, unfortunately, cannot always be pinpointed or predicted. One the major causes of softening is the decomposition of pectic material, which acts as the cementing substance in the cells of the olive. This breakdown is commonly brought about by the growth of microbes, which produce pectin-degrading enzymes.

Some microbes, such as molds and certain bacteria, which grow on the surface of the storage brine, produce large amounts of these enzymes, and the olives are rapidly softened, usually within two weeks. Therefore, the storage brine should be checked periodically and any scum removed. There are other bacteria that produce smaller amounts of the pectinolytic enzymes and which grow in the brine after the lye has been washed out. In this case, the olives show evidence of softening after longer times of storage, usually after about 4 weeks. Microbial softening of olives is sporadic and may not occur in all containers at the same time. Some preventive measures include keeping the containers covered, using a storage brine with at least 10% salt, canning the olives, or storing in the refrigerator.

Softening can be caused by the decomposition of pectin resulting from the use of a lye solution that is too strong or at too high a temperature. The problem can also result from using olives that are too ripe, larger than usual, or from using a variety that has a tendency to soften, such as the Ascolano and Baroni varieties.

**FISH EYE** - Bacteria, usually coliforms, grow just under the skin of the olive. As they produce gas, small blisters are formed. This usually occurs during the washing process that follows the lye soak. This can be prevented by changing the water at frequent intervals until the washing process is finished. These olives are safe to eat.

**GAS POCKETS** - Gas pockets are similar to fish eyes in their origin and can be prevented in the same way. The difference is that the bacteria are deeper in the tissue of the olive, and instead of blisters, they form a pocket of gas. These olives are safe to eat.

**FOAMING** - This is usually caused by olives that are over-mature and have an excessive amount of oil. This oil reacts with the lye, causing the foam. If this happens during the lye soak, replace with a new lye solution.

**BOTULISM** - *Clostridium botulinum* has been a problem in canned olives. They should be processed using a pressure canner under steam pressure at 240 degrees F (10 lbs. per square inch at sea level) for 60 minutes. There is the possibility of botulism occurring in the storage brine when the salt concentration is less than 10%.