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New York State Agricultural Experiment Station

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HOME-MADE SAUERKRAUT

Sauerkraut, according to the definition formulated in a regulation under the Federal Food and Drugs Act, is "the clean, sound, product, of characteristic flavors, obtained by full fermentation, chiefly lactic, of properly prepared and shredded cabbage in the presence of not less than 2 per cent, nor more than 3 per cent of salt. It contains, upon completion of the fermentation, not less than 1.5 per cent of acid expressed as lactic acid. Sauerkraut which has been rebrined in the process of canning contains not less than 1 per cent of acid."

FIG. 1.—SOME NEW YORK STATE BRANDS OF SAUERKRAUT.

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Commercial manufacturers of sauerkraut are required to prepare and keep their product up to these standards. The specifications are the result of experience which has shown that by following them the highest grade products are obtained.

HOW TO MAKE KRAUT

Kraut is prepared in the home from large, firm, well-ripened heads of cabbage. These should be allowed to stand at room temperature for a day to wilt, the wilting causing the leaves to become less brittle and thus not so likely to break in cutting. The outer leaves are trimmed down to the white leaves and the heads are then washed. With ordinary home equipment, the heads must be cut in halves or quarters with a large knife and the core removed or cut fine. The kraut is cut with an ordinary kraut cutting board with blades set to cut shreds about the thickness of a dime. The setting of the blades varies, some preferring to cut the cabbage very fine, while others use a coarse cut.

The cabbage is packed in clean, paraffined barrels or jars with a light sprinkling of salt. If it is necessary to paraffin the barrels, a high-grade product should be melted and applied to the dry container with a brush.

Salt is used in the proportion of 1 pound to 40 to 45 pounds of cut cabbage. If the salt is allowed to remain on the shredded cabbage a short time before packing, less breaking of the shreds is obtained.

Packing is quite often the cause of much unnecessary bruising and tearing of shreds and results in a softening of the kraut. A large wooden tamper should be used and with it the kraut should be firmly pressed or pushed down to force out the air rather than pounded until juice is produced. Ordinarily, pounding is not necessary to draw out the juice for if the salt is added as noted above, it will draw out more than enough juice to cover the cabbage by the time the container is filled. When the container is filled the juice should come to the surface.

The kraut should be covered with a clean white muslin cloth and then with a round paraffined cover of such size that it just fits within the container. A weight is placed upon the cover of such size that the juice comes to the bottom of the cover, but not over it. This will keep the cloth moist but juice will not cover the cloth. The weight necessary for this purpose varies, especially during the first few days of fermentation and with changes in temperature, and therefore should be watched carefully. For smaller containers a weight consisting of a jar to which water can be added or taken from serves very well. The placing of weights on the kraut is very important in producing good

quality sauerkraut. Commercial packers are very particular about this.

Fermentation starts within a day after packing as is usually evidenced by the formation of gas bubbles on the surface. Altho fermentation is more rapid at higher temperatures, more spoilage is also likely to occur. The best quality kraut is produced at 70° F or lower. It requires a month to six weeks for the kraut to cure properly at these temperatures.

CANNING OF KRAUT

If it is used quite frequently and intended to be entirely consumed in fall and winter, kraut may be left in the container in a cold room; otherwise, it should be canned. Canning is simple and insures a good supply of kraut thruout the year. The cold pack method is more commonly used, altho kraut may be successfully packed by hot pack methods. In the cold pack method the kraut is warmed to between 110° and 130° F in its own juice, packed into sterilized jars, covered, and cooked in a kettle of boiling water for 20 to 25 minutes. The jar is sealed when removed and placed in a cold place so that it may cool as rapidly as possible. If allowed to remain hot for a long period, the kraut softens and darkens in color. When canned and cooled properly the kraut is very much like the raw product in texture and flavor.

WHAT HAPPENS IN THE CURING OF SAUERKRAUT

Altho many people have made kraut for years, few realize what happens in the typical curing process. When cabbage is cut there are a great many bacteria, both good and bad, yeast and molds upon the cut shreds. The salt sprinkled upon the cabbage draws out the sugar which is used by certain of the bacteria. They change the sugar to acids and other by-products. A typical mellowing of the cabbage takes place with these changes, resulting in the product we term sauerkraut (acid cabbage).

HOW AND WHY SAUERKRAUT SPOILS

When kraut is properly packed, with the correct amount of salt, and at a reasonable temperature, only certain good types of bacteria are able to grow. The various spoilage types of bacteria, yeast, and molds are stopped from growing by the absence of air and the acid which is rapidly formed by these desirable bacteria. At times insufficient amounts of salt are used, or the kraut is not thoroly packed, or the juice has drained off, or the kraut may not be covered properly. Under such conditions spoilage may occur. Spoiled kraut may be of various types and may be due to different reasons, as follows.

Pink kraut is caused by certain types of yeast. These grow on or near the surface of kraut if the kraut is improperly packed and if the salt content is above normal or is unevenly distributed.

White scum on kraut is a yeast growth and is controlled by having the proper covering and weights on the kraut so that as little as possible is exposed to the air.

Soft kraut is associated with too low salt content, with too high temperatures, with air due to improper packing, and to faulty cleaning of kraut containers.

Slimy kraut is due to the excessive growth of certain types of bacteria. It is associated with a raised temperature and low salt content.

Rotted kraut can only be found where there is a large supply of air as on or near the surface of kraut containers. It can be controlled by proper covering during curing.

Dark colors in kraut are common defects. They may be caused by uncleanliness, to failure to properly trim and clean the cabbage, by uneven salting, by a high curing temperature, by excessive contact with air or by contact with wood of barrels formerly used for spices or which may contain traces of iron.

Off flavors in kraut may be caused by various factors, but the most objectionable flavors are due to the diffusion of the spoiled products mentioned above into the good product.

THE USE OF SAUERKRAUT

There are any number of ways in which sauerkraut can be used. The old-time method of preparation is to boil it with wieners or spare-ribs. It will pay to look up some of the more desirable methods of preparation, such as baked dishes with meats other than wieners, and as salads, relishes, soups, and vegetable dishes. Meats in general are made more tender by cooking with kraut.

There is little doubt that quite a few have found these newer methods of preparation appetizing, for the commercial production of sauerkraut has increased tremendously in the last 15 years. Kraut was first packed in cans in 1888 and in 1919 approximately 25,000 tons of kraut were handled in this way. At present there are about 160 kraut factories in the United States packing about 190,000 tons of kraut. Approximately one-third of this is packed in the 30 factories in the vicinity of this Station. Many of the more important New York State brands are shown in Fig. 1. There are numerous other brands packed by these companies, particularly for chain stores and wholesale groceries.

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