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PRESERVATION OF APPLE CIDER AND FRUIT JUICES

by
Ernest H. Wiegand and Ho-Ya Yang
Food Industries Department

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Cleanliness is the first consideration in the making of sweet cider for drinking purposes. The fruit should be thoroughly sorted over and wormy or decayed specimens discarded. The fruit is then washed to remove all dirt. In commercial manufacture, cylinder or brush type washers may be used for this purpose. A continuous flow of fresh water is used in connection with agitators or brushes. After thorough washing the fruit is ground or grated by passing through an apple grater, which shaves it into small pieces. This assists the operator in obtaining a higher percentage of juice than would otherwise be obtained if the fruit were not macerated into small particles. Apparatus for crushing or grating fruit can be had from present manufacturers who handle equipment for the extraction of fruit juices.

Presses of either the screw or hydraulic type can be used for the extraction of the juice from the grated fruit. The hydraulic type is more efficient, giving a much larger amount of juice. The use of racks and press cloths in connection with the hydraulic press will also add to the efficiency of the operation. About four to four and one-half gallons of juice can be obtained from each bushel of fruit.

After pressing the juice should be handled in accordance with the desire of the operator in packing for future use. For ordinary barrelling operations not as great care is necessary in treating the juice because a highly clarified product will not be required. Coarse materials can be strained out and even a milk clarifier or centrifuge can be used for partial clarification.

Where extreme clarity is desired, however, enzyme preparations are needed to speed up the operation. For removal of the colloidal material found in fruit juices that cause turbidity use a commercial enzyme preparation called Pectinol.* A small quantity of Pectinol A (20 oz. per 100 gallons of juice) is stirred in. If the juice is at a temperature of 70° F. it will take about 16 hours. Heat the juice to 130° F. and precipitation will occur in two hours. After the juice is treated it should be filtered and heated to at least 170° F. before it is filled into containers. After filling these are sealed and pasteurized at once. The pasteurization is at 170° F. for one hour. After pasteurization the containers are immediately cooled to approximately room temperature that is still high enough to dry off the containers after they have been placed away for storage.

* Pectinol is manufactured by Rohm and Haas Company, Philadelphia, Pa.

In case of semi-commercial production of fruit juice the following method should be used in clarifying the juice. The juice should be run into settling tanks. The use of Pectinol is desirable at this point as it improves the clarity.

Filter aids such as Hyflo Supercel* should be used in connection with good filtering equipment to assist in clarification. It takes about one-half to one percent by weight of this material added to the fruit juice to make a perfectly clear product. The Supercel is first added to water in small amounts and the filtering cloth or pad of the filter is coated by pumping the water containing a small portion of the Supercel through the filter. The remaining quantity of the Supercel is mixed with the pectinol treated juice and pumped through the filter for clarification.

Clear juice obtained by this method can be pasteurized by filling into sterilized containers after heating in a flash tubular heater to 180° F. Such heaters can be easily constructed using block tin or stainless steel tubing immersed in a tank of hot water controlled to 180° F. As the juice flows through this pipe it quickly heats to the required 180° F. and can be filled into glass or enameled tin containers and sealed. This method is simple and the enclosed illustration shows how it should be set up.

For farm packing the strained juice can be placed in clean sterilized gallon-size glass jars, set into water and heated to 180° F. When the center of the bottle reaches 180° F. it can be sealed with sterilized corks or caps, cooled and stored. Such juice is good but may not have the clarity of the above packs.

Barrelled Cider

The above method can be applied to cider for barrelling. The cider is first flash pasteurized and by the same method cooled, and then run into an oak barrel properly cleaned and sterilized.

When full, dissolve one-tenth of one per cent by weight of a good pure grade of sodium benzoate in a small quantity of hot water and add to the barrel. Bung the barrel and mix thoroughly, by rolling. Store at 32° F. Such cider will keep for quite a long time. Without the sodium benzoate it will not keep long because of possible contamination. Large glass bottles holding five gallons can be filled with the hot pasteurized juice for storage. These do not require cold storage if handled as indicated under canning or bottling.

Barrelled apple juice containing benzoate of soda, if offered for sale, must be clearly marked "Contains not over 1/10 of 1% of sodium benzoate."

* Hyflo Supercel can be obtained through Johns Manville Company, Portland, Oregon.

SMALL COMMERCIAL JUICE CLARIFYING AND PASTEURIZING UNIT

CAPACITY: 50 GALLONS PER HOUR

SCALE: 1" = 2'

FOOD INDUSTRIES DEPARTMENT
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