

# Comparison of the Elaboration of Hard Apple Cider with Fresh and Frozen Wort

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## Abstract

The objective of this project was to compare the results of creating hard apple cider with fresh and frozen wort. The study considered the percentage of alcohol, percentage of sugar, pH levels and temperature. There are several other factors that affect the characteristics of hard apple cider but for the purpose of this investigation, it was only considered those mentioned. For each of these variables, it was analyzed the variability between the two processes. The results of this investigation will be of great value to apple farmers as it can be another selling channel available to them. This discovery will mean that, in case of an overproduction of apples, farmers and apple cider producers can store the excess of wort on a fridge and use it later. The study considered for the percentage of alcohol the unit %alcohol and for the percentage of sugar %Brix. For both variables a refractometer was used. We also analyzed the pH levels with pH strips and a pH meter. In addition, for temperature a cooking thermometer was used. The process for creating the hard apple cider was as follows: first, the stems of the apples were removed. Then, the fruit was cleaned with running water. Later, a solution of drinking water and sodium metabisulfite was created to immerse the apples on it with the objective of eliminating any substance that will contaminate the wort. The process was continued by cutting the apples and blending them. Next, half of the wort was deposited on a fermentation tank of our own creation (for the process of fresh wort) and the other half on a recipient that will be stored in the freezer for a month (for the process of frozen wort). A 10L water bottle, a valve and an airlock were used to create the fermentation tank. Measurements of %Brix and pH levels were made each other day for a month. After a month, the substance from the fermentation tank was deposited on a glass recipient with a cork. This process was repeated for the frozen wort. At the end, it was calculated the % alcohol and the %Brix.

## Keywords

Cider, Fermentation, Wort, and Process Improvement

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**Ivana Karina Reyes Rubio** is a student from Instituto Tecnológico de Estudios Superiores de Monterrey, currently in 8th semester of the major of Industrial Engineering with a minor in Systems and Supply Chain Management.

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