

PFU holds

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and clear. It is then cooled to 85 to 90 degrees and additional water is added.

The solids are then separated from the sugar solution, known as wort. These solids can be used as a high-protein feed for cattle, if supplemented with an energy ration and urea.

The solution is then ready for fermentation. To do this, yeast is added to the wort, the lid is closed, and the solution "cooks" for two days. To speed up her demonstration, Demenico had prepared the fermented ingredients in the alcohol recipe prior to the meeting.

After two days, the mixture is about 10 per cent alcohol and is known as "beer". At this point, the process has passed the point where contamination is a problem. However, if the mixture were contaminated during fermentation, it would be possible to make a brew of lactic acid rather than beer.

At this stage in the demonstration, Demenico processed the beer in order to separate the alcohol and water. Her distillation apparatus consisted of a hot plate, and a simple separation column and vaporization chamber.

After a short time, the table-top still produced a small amount of alcohol.

Curt Sorteberg, a chemist for the Iowa Farmer's Union, explained that this end-product has to be denatured in accordance with specific formulas from BATF.

Denaturing the alcohol lets the Feds rest easier in knowing that the white lightning is not drinkable. A

fancy term used by the inspectors and serious stillers, which means the same thing as not fit to drink, is non-potable.

Sorteberg explained to the group how alcohol can be made on a larger scale, using a system known as the Colby column. This set-up is estimated to cost around \$20,000 and the cost of making alcohol with it is about 85 cents a gallon, using a corn cost of \$2.50.

He told the group that the expected yield for a bushel of corn would be about 2.5 gallons of alcohol. He said that it is possible to use moldy or spoiled grain in the process.

Sorteberg compared the corn yield to that of sugar beets, 0.5 gallons, and artichokes, 0.6 gallons. The advantage to these types of crops is that they can be grown on poorer soils than can corn.

An important side-note, Sorteberg mentioned, from the alcohol-making process is that the yeast triples in volume. This by-product may be an optional sales addition, or at the least, an important feed additive for the farmer to consider.

The type of yeast used in the fermentation process is a commercial wine yeast. The IFU expert noted that this kind of yeast is able to withstand higher percentages of alcohol and sugar than a baker's yeast.

Sorteberg told the group that NFU now has the facilities for continuous production which can be adapted for home plants. He said that they are trying to keep the price in the "tractor range", or around \$20,000.



Curt Sorteberg is an alcohol fuel specialist for the Iowa Farmer's Union, Des Moines. He claims that the farm still will lead to farmer's declaration of independence.

He noted that in Iowa, there are more and more farmers installing these alcohol plants. A new loan program being prepared by the U.S. Department of Agriculture will make funds available to farmers for more small-scale alcohol plants.

Sorteberg said legislation now moving through the U.S. Congress would provide \$800 million in direct and guaranteed loans for small-scale plants.

Sorteberg explained that farmers were experimenting with gasahol stills prior to alcohol plants.

"Nebraska was the forerunner in gasahol," he stated. Gasahol is the combination of gasoline and 200 proof alcohol. He explained that proof was the per cent of alcohol; 200 proof equals 100 per cent, 100 proof equals 50 per cent alcohol and 50 per cent water.

Sorteberg claims that the production of alcohol is a

very safe procedure. But, he said that there are always potential dangers when dealing with steam under pressure, and alcohol vapors.

The greatest hazard is the economics of installing a still, he said. He stressed the importance of every farmer doing a feasibility study before undertaking his own fuel factory.

"The economic feasibility of alcohol production can be argued, but availability of fuel could well be the key issue," Sorteberg said. "If farmers don't have adequate fuel supplies to plant or harvest their crops, their

entire livelihood is in jeopardy."

"It is extremely important that farmers be given the opportunity to produce alcohol themselves through farmer-owned and controlled cooperatives. Otherwise, big corporations will control alcohol fuels just like they control other energy sources."

He concluded that farm-produced alcohol gives farmers a choice of marketing their products for food or fuel, and makes them energy self-sufficient. It can be their declaration of independence.

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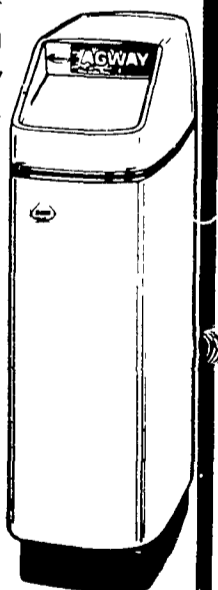
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