Penn Agrihol

(Continued from Page A27)

mendations by our team of experts."

Kessler explained the co-op is looking at the advantages and disadvantages of the conventional technology of cooking grain to produce alcohol, or the more advanced method, "state of the art technology", called extruding.

One other method, and the one that the co-op is leaning towards, admitted Kessler, is the reactor He noted this method is the most efficient way to produce alcohol.

In all three methods, the grain is milled and prepared for the liquifaction process This step in the production of alcohol makes starch from the grain available for yeast to work on in the cooker and extruder methods, or for enzyme action in the reactor.

Sacrification is the next step in the process, where starch is turned into sugar. Fermentation follows, with six or seven batches of "beer" being made at a time.

Kessler explained beer consists of ten percent solids These solids, called stillage, are separated from the brew by centrifuge. These "wastes" are then pressed down to about 65 percent moisture and become a high-protein feed called distiller's dried grains

"The profitability of an alcohol plant depends on how the DDG are handled," noted Kessler. He pointed out Penn Agrihol hopes to ship its 65 percent-stillage to co-op members without further drying down by convection heat in order to save on expenses.

DDG is an important by product because for every 2.5 gallons of alcohol produced there are 18 pounds of DDG to deal with, said Kessler

"In our area, we aren't corn deficient when it comes to feeding livestock — we're protein deficient. Feeding distiller's dried grains can add a 30 percent protein source to a ration," he said.

The co-op vice-president added he expects to see a net return of 62 cents per gallon from the sale of DDG This money, he said, will go back to the co-op, with members receiving a return on their dollar investment once the co-op turns profitable

One problem with handling DDG at 65 percent moisture is spoilage — it has to be used within five days

"We're looking into drying it down to the right percent moisture to store it as silage," said Kessler, "but we have to look at it from an economic stand point."

After the stillage is separated from the beer in the alcohol production process, Kessler said the next step is distillation The co-op is looking at an experimental distillation column that, according to Kessler, would reduce the cost of production to a fraction of current costs using previous methods

"This chemical separator will give 200 proof alcohol without a dehydration column which uses benzene or unleaded gas to take the water off," he explained

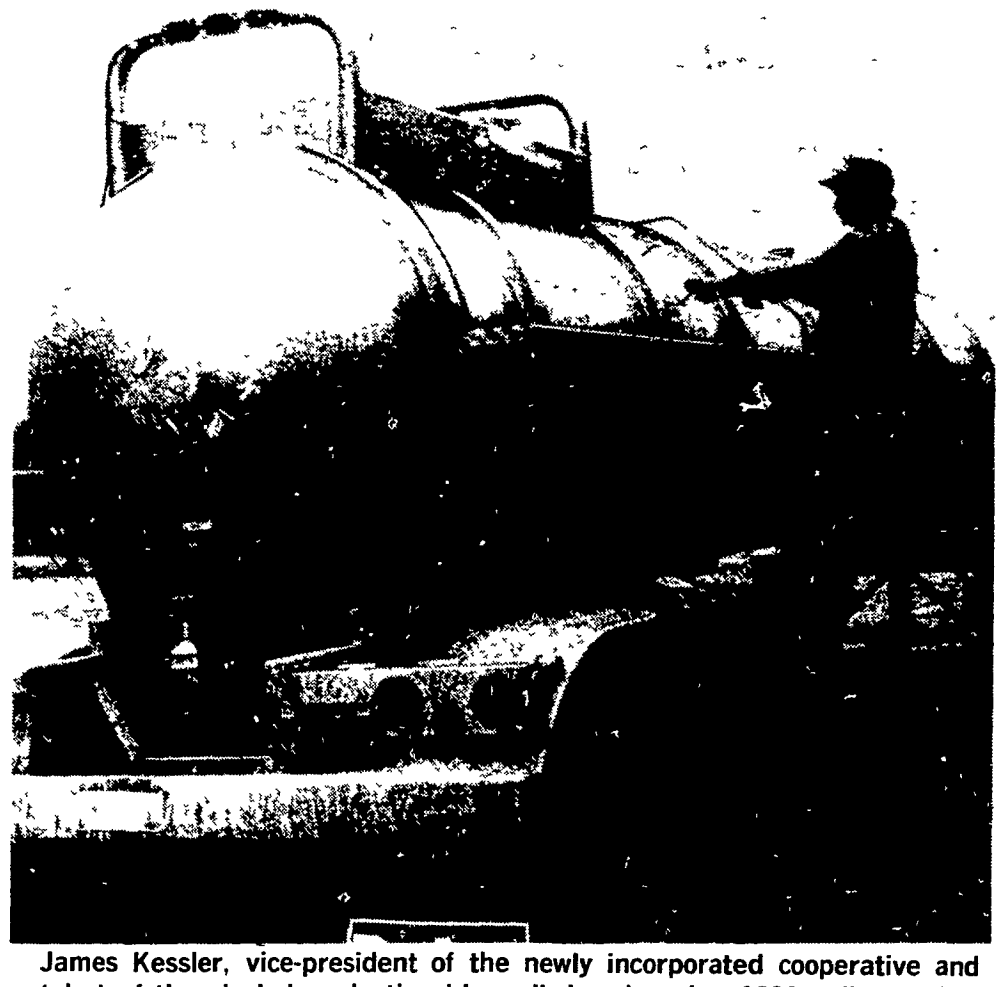
Kessler anticipates the cost for the equipment needed to get the operation running to be about $1 per gallon of alcohol produced in a year He optimistically projected the co-op, however, would recover its costs within a year

Giving Penn Agrihol some help in getting off the ground is a liquid fertilizer business, Kelmanada. The co-op will be using the company's facilities for an office, and will be relying on its tankers, silos, and trucks for a while, said Kessler

One of the co-op's first purchases was a million BTU boiler — gotten out of a dormitory at Penn State This boiler will be used to run the plant or a smaller faction of the alcohol process, noted Kessler He added alcohol production uses a lot of steam

Concerning co-op membership, Kessler said he expects farmers in this area to be more interested in paying the one-time fee so they can secure the distiller's dried grains — more than getting the alcohol itself

But, he noted, there may come a time when the gasoline lines are long enough and the price of petroleum fuel is high enough that alcohol will be the only economical choice. Co-op members will have first in line in the event of a fuel shortage, he said.



James Kessler, vice-president of the newly incorporated cooperative and catalyst of the alcohol-production idea, climbs abroad a 4600 gallon tanker which will be used to transport Penn Agrihol's finished product — alcohol for fuel.

"Right now the U.S. uses about 350-400 million gallons of alcohol each year. Out of this, only 250 million gallons are derived from grains

"Industry projections for the turn of the century, however, is for alcohol consumption to be up to 7 53 billion gallons per year."

Kessler compared the change from petroleum powered engines to alcohol with the switch farmers made after World War I from horse power to tractors

He pointed out the technology for alcohol production is being refined so quickly that it's a "matter of keeping up" with it all

He noted with an edge of excitement in his voice that he expects within two years the technology will be perfected for using cellulose — wood chips, garbage, corn stover — in alcohol production. This enzyme process will change the face of alcohol production, he said

"Right now, the technology is based on corn, but we can use all of the cereal grains without any difference in alcohol quality The only difference is the greater alcohol yielding potential in corn because of the greater amount of starch in the kernal

"What's good about alcohol production is we can use any corn — even the stuff that's unfit for animals to eat Moldy, distressed, and No 3 corn is fine," Kessler said.

"Penn Agrihol is looking at what it can do today — but we have our eyes on the future," Kessler concluded

PENNSYLVANIA AGRICULTURE

WE'RE GROWING BETTER