

One fish dust patty on rye, please

UNIVERSITY PARK — Fish products suitable for human consumption may soon be produced from an ingredient called fish sawdust. This granulated fish muscle, or GFM, is a high quality protein source being studied by two Penn Staters for use in human food.

"Nobody has ever looked at this material before," says J.H. MacNeil, professor of food science at Penn State. "Our main thrust was to identify all possible

characteristics of granulated fish muscle that were important for human food."

MacNeil and Denise Ciabocchi, graduate assistant in food science, confined research to codfish, since it is the major species used in frozen fish portions. Whole fillet and minced fish were used for comparison.

Analysis of granulated fish muscle found protein values around 17 percent, fat 0.7 percent, moisture 81 percent, and ash 1

percent. These statistics are comparable to whole fillet and minced fish.

This granulated fish muscle looks like sawdust, MacNeil noted, except that it is white. Viewed under an electron microscope, granulated fish muscle resembles a wet cornmeal product, but with large visible amounts of intact muscle fiber.

Granulated fish muscle is used to some extent in pet foods. Otherwise, it is a waste product of an

estimated 10 million pounds in the United States each year.

Blocks of frozen fish are imported primarily from Iceland and Canada. In cutting pieces of sandwiches, sticks, and other fish products, the blocks pass through several saw blades. The process leaves behind a fine residue similar to sawdust.

Emulsifying capacity — the ability to bind together protein, water, and fat — was somewhat lower for granulated fish muscle

and minced fish than for whole fillets. However, GFM is quite capable of forming a stable emulsion — a crucial property for products made from muscle food, like hot dogs.

During frozen storage of cod, quality deterioration is accompanied by muscle toughening. This can be detected by consumers. However, when properly stored at -20F, the toughening is

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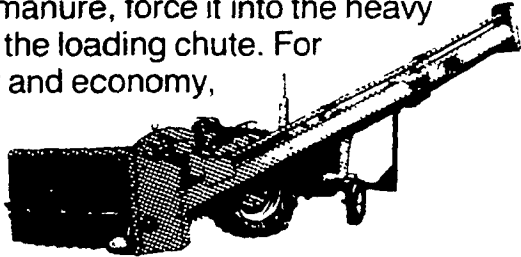
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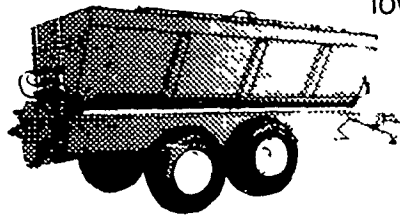
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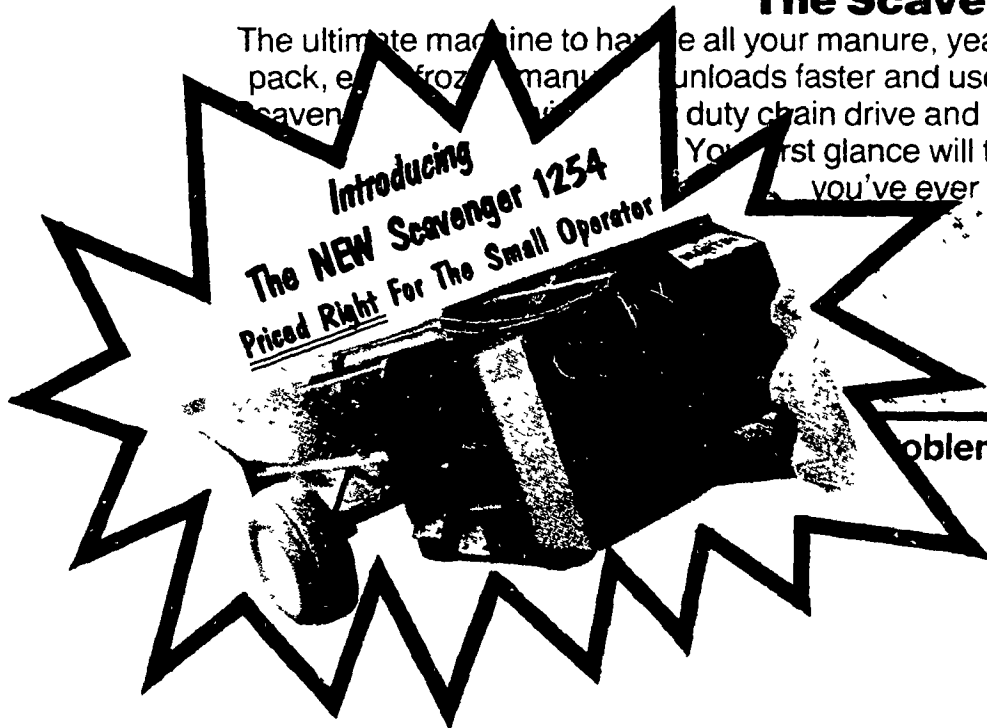
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