



ASSOCIATED STUDENTS | *sustainability fund*

Rice Bran Oil Expeller



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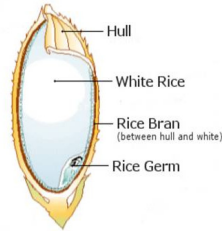
INTRODUCTION

The purpose of this project was to design an oil extraction system that produces a clean oil product that is environmentally friendly and conforms with OSHA standards.

COMPRESSION SCREW COLD PRESS EXTRACTION

Cold Press Extraction compresses a material to the point where oil fluids are pressed out. This method was chosen for the following reasons:

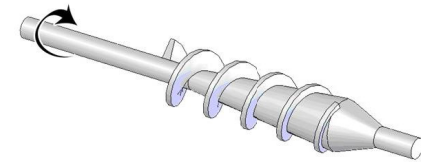
- Extracts oil without the use or production of harmful chemicals
- Cost effective design when compared to super critical extraction.
- Proven in industry in other nuts and seeds.



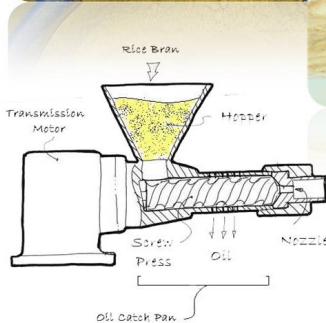
RICE BRAN

Rice Bran is a byproduct of rice processing. It contains oil that can be utilized in producing bio-diesel. Lundberg Family Farms, a northern California rice producer, has an interest in pursuing this alternative use for the rice bran byproduct. In order to produce bio-diesel the oil must first be extracted from the rice bran. An evaluation of principle methods of oil extraction from raw material was conducted. Based on the findings, it was determined that a cold press extraction system best fit the parameters feasibly as stipulated by Lundberg Family Farms.

THE COMPRESSION SCREW



The process of oil extraction is based on the function and design of the compression screw, otherwise known as a worm screw. The rice bran feeds in from the hopper and is forced through the expeller case by the turning of the compression screw from the motor. The diameter of the shaft gradually increases. This reduces the volume of the rice bran as it is forced down the screw. This action increases the pressure inside the case, forcing the oil out of the rice bran and completing the extraction process.



TEST SET UP

The sketch above displays the process of rice bran through the oil expeller. As the rice bran travels through the case it is compressed to the point in which the oil is squeezed out of the material. Openings located on the bottom of the case allow the oil to exit the casing into a catch basin.

CONCLUSION

Through this project, it was found that we can extract oil from the rice bran as long as certain parameters within the system remain controlled. One of the major influences on the system was introducing air flow into the intake while controlling the feed rate. Once the bran is flowing steadily through the system, a few nozzle adjustments can be made, which causes system temperatures to increase and oil begins to flow.