THE PROCESSING OF CANOLA SEEDS

Introduction

During the 16th Palm Oil Mill Engineers/Executives Training Course it was suggested by some of the participants that we should include in "Engineering News" articles on the processing of vegetable oils, other than palm, to broaden their knowledge of the oil extraction industry.

In response to this request we have prepared a paper on the processing of canola seeds and if our readers are interested we will include articles on the processing of other oil seeds in future issues.

Canola Seeds

Canola is a form of rape seed (Canadian Low-Acid) with a very low erucic acid content (2 to 5%) and glucosinolate content (max. 3 mg/g).

The seeds of the rape plant are contained in a pod known as *sessile silique*. They are small round seeds, 1-3 mm in diameter, similar to mustard, turnip, etc. and their colour varies from very dark to light brown. The bulk density of the seed is 0.65-0.66 kg/dm^3. The hull accounts for about 11%.

The seed has the following composition:

– Water	6-9%
– Nitrogenous substances	20-24%
– Oil	39-42%
– Nitrogen-free substances	12-20%
– Crude fibre	10-12%
– Ash	4-6%

Processing

Production of high quality Canola oil and meal begins by utilizing high quality Canola seed. Basically, the Canola seed crushing process endeavours to remove all of the oil from individual plant cells in the seed and separate the oil from the meal. The schematic drawings shown by *Figure No.1* illustrate the processes for seed cleaning and processing and solvent extraction and pelletizing of the meal. From these drawings you will see the complete process can be broken-down into nine steps as follows :-

1. Clean seed is essential, and a cleaning operation to remove all foreign material is the first step in crushing.

2. Clean seed is crushed or flaked by a series of roller mills to break the seed coat.

3. The crushed seed is then cooked in a series of kettles called stack cookers.

4. From the cookers, the hot flaked seed is ready to have the oil extracted. Modern crushing plants use a combination of pressure and solvents to remove the oil from the crushed seed. Screw presses reduce the oil content of the seed from 40% to about 15 to 17%.

5. The resulting press cake with about 15% oil content then moves into a solvent extractor to remove almost all of the remaining oil. At the completion of this extraction process, the cake, now called Canola meal, only contains about 1% oil.

6. Next using indirect heat and live steam, the solvent is removed from the meal.

7. The meal is then cooled and dried for storage. It is a major protein supplement used in livestock and poultry rations.

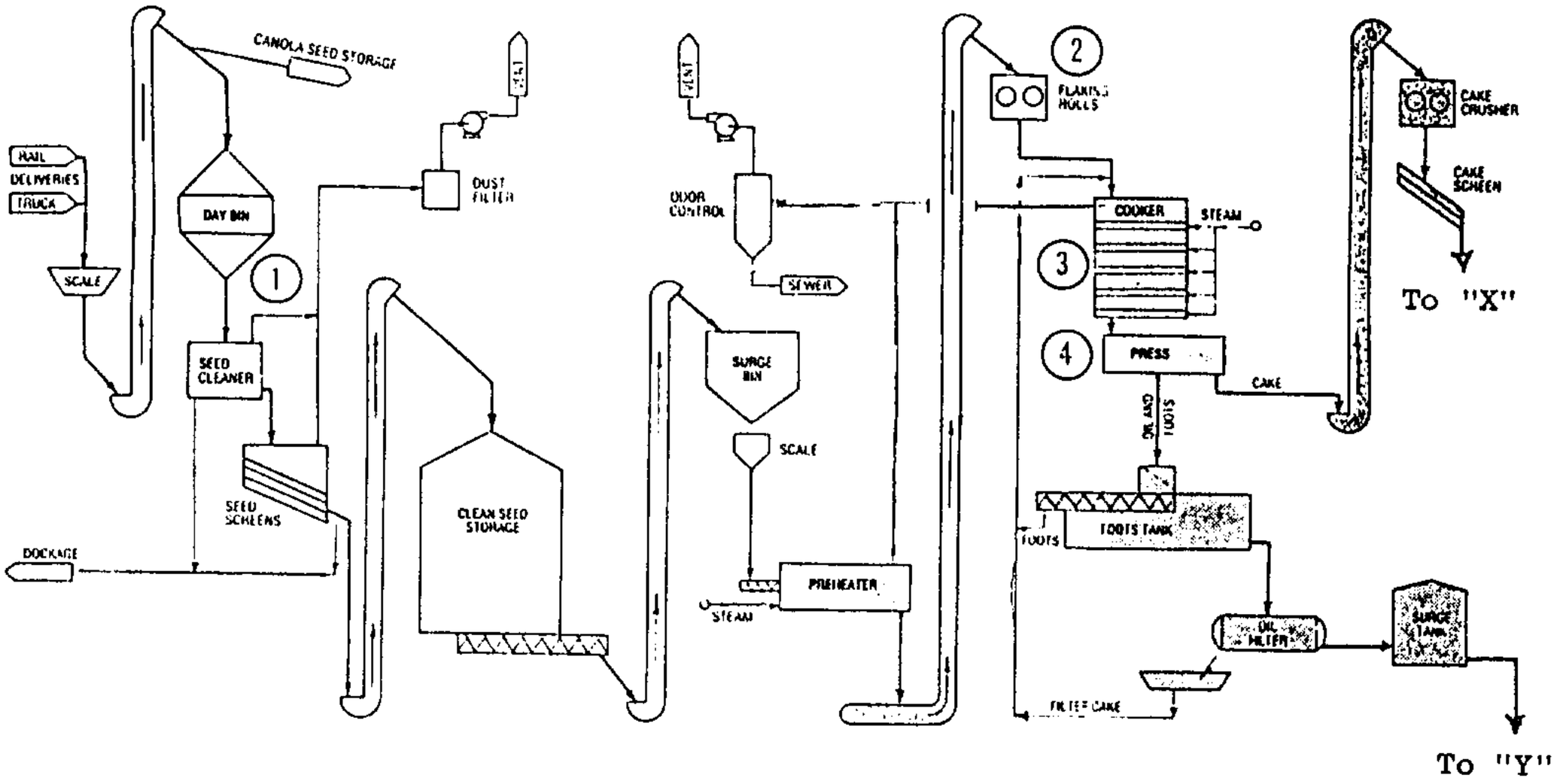
8. Degumming equipment removes lecithin gums and yields crude degummed Canola oil.

9. Crude degummed Canola oil is available to vegetable oil refiners for processing into salad oil, cooking oil, mayonnaise, margarine and shortening. And, of course, is a competitor of palm oil products.

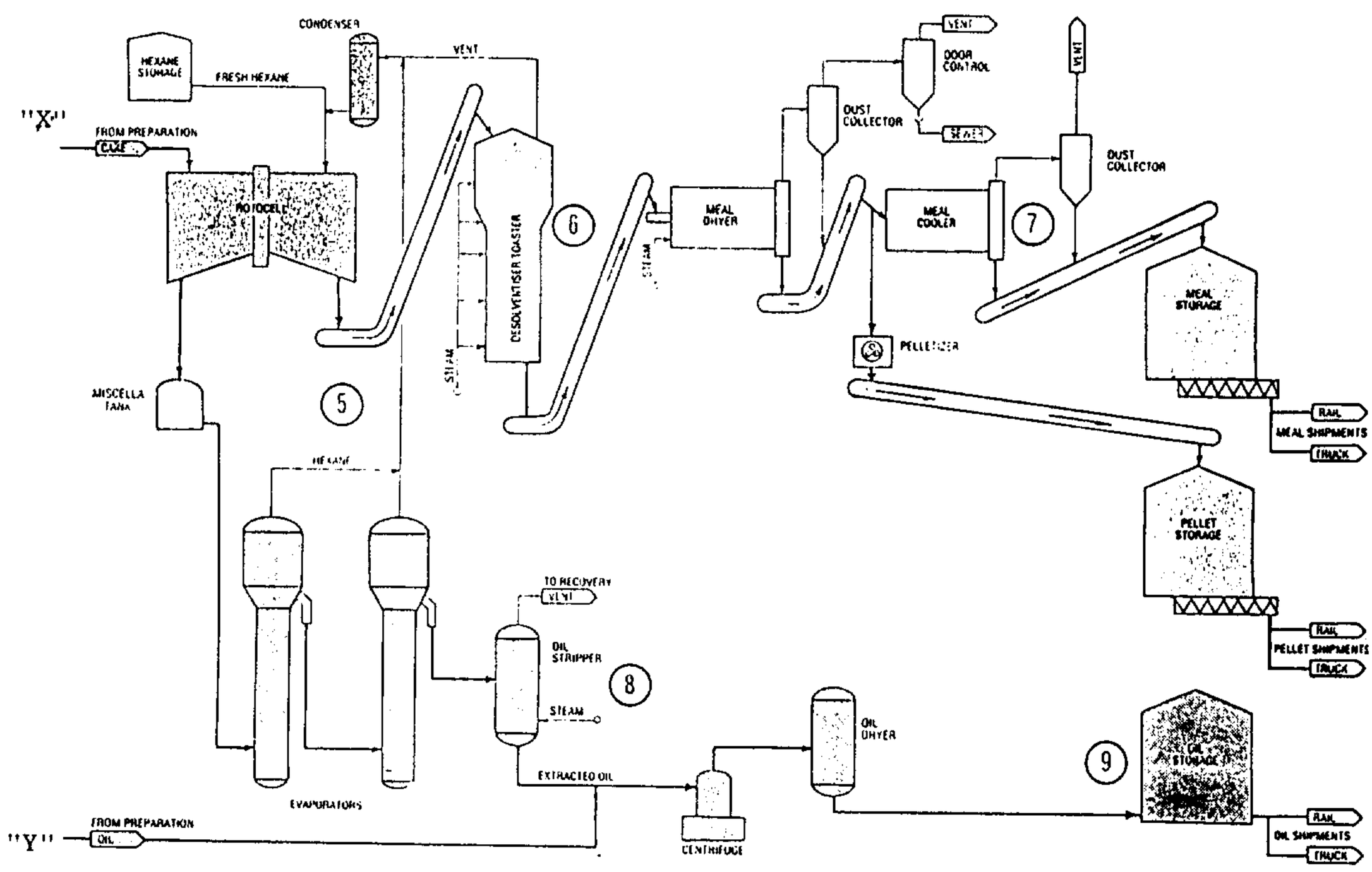
Ir. J.H. Maycock

Are you sure it will revolutionize the process of palm oil extraction ?

SEED CLEANING AND PREPARATION



SOLVENT EXTRACTION AND PELLETIZING



Fugure 1. Flow Chart of the processing of Canola Seeds