



Improving the Oil Yield of Nuts and Oilseeds: A Technical Guide

Empowering Small Farms, Transforming
Rural Economies.

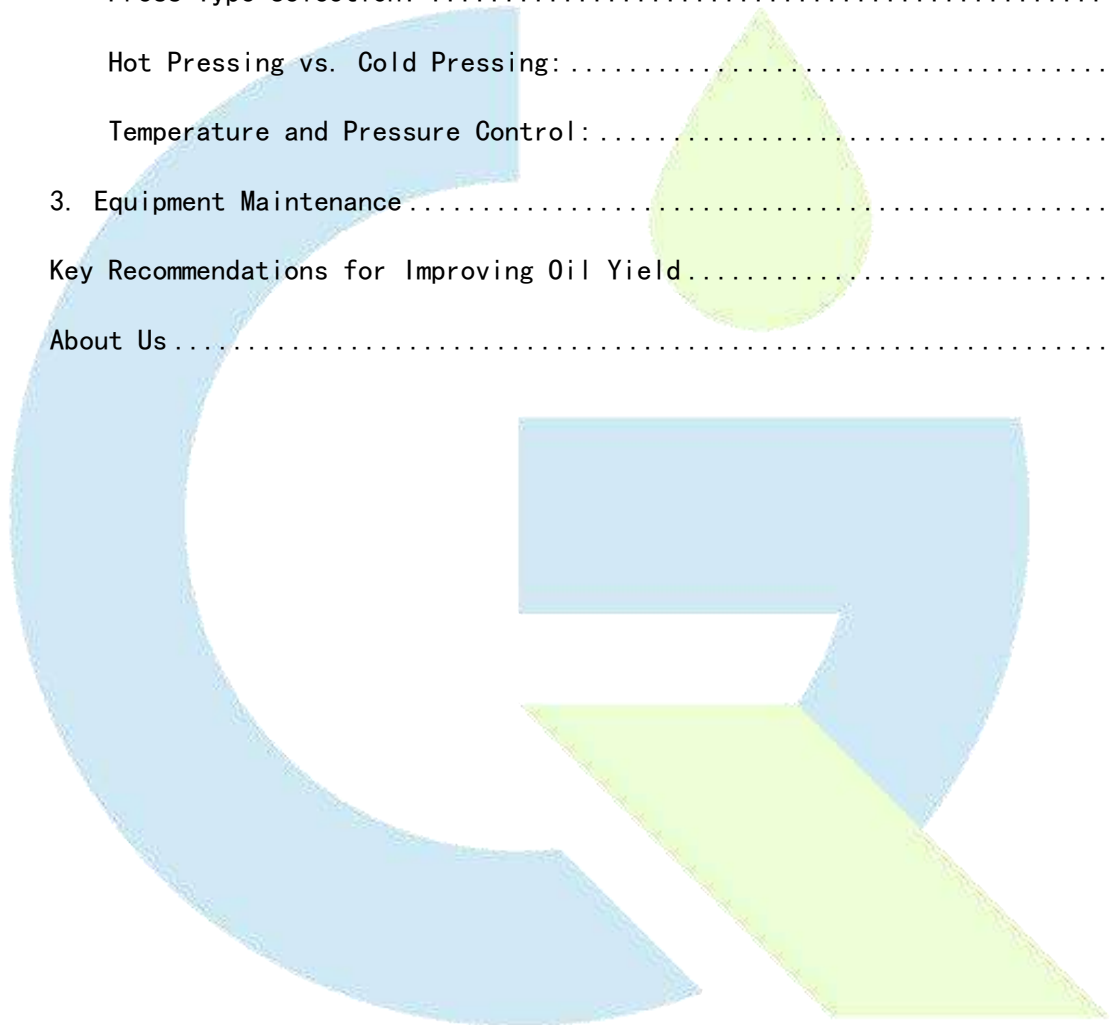
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Introduction

The efficiency of oil extraction, or "oil yield," is a critical factor for profitability in the production of oil from nuts and seeds. Oil yield is defined as the amount of oil obtained from a specific quantity of raw material, typically expressed as a percentage. Maximizing this yield requires careful management of several interconnected variables, from raw material selection to the final pressing process. This document outlines key strategies for enhancing oil yield.

1. Raw Material Quality and Preparation



The final output is heavily influenced by the initial quality of the crops.

- **Crop Selection:** The type and variety of the oilseed or nut are primary determinants of potential oil yield. Certain varieties are specifically cultivated for higher oil content compared to those grown for other purposes, such as snacking. Starting with high-quality, mature, and oil-rich crops establishes a strong foundation for a successful extraction.
- **Cleaning and Dehulling:** Raw materials should be thoroughly cleaned to remove impurities like sand, dirt, and twigs. These contaminants can absorb oil during pressing, trapping it in the waste cake and lowering the overall yield. Furthermore, hard debris can cause premature wear on press components, reducing the machine's long-term efficiency. For nuts like peanuts, removing the shells is essential, as shells contain virtually no oil and their presence

reduces the concentration of oil-rich material in the press.

- **Moisture Control:** The moisture content of the raw material must be precisely controlled. If seeds are too moist, water and oil can form a stable emulsion during pressing, which hinders separation and traps oil. Conversely, overly dry seeds can become excessively hard, leading to lower yields and potential burning from friction within the press. For most seeds and nuts, a moisture content below 7% is considered optimal for pressing. This can be achieved through methods like sun-drying or gentle roasting.

2. Optimizing the Pressing Process

The chosen method and parameters of extraction have a direct impact on the final yield.

Press Type Selection:

The choice of equipment is fundamental to the extraction process.

Screw Press: Often utilized for continuous work with large volumes of materials like peanuts, a screw press uses a revolving screw shaft within a barrel to continuously crush and squeeze the seeds. The intense pressure and friction force oil out through small openings, while the dry cake is pushed out the end. This friction also generates heat, which helps release more oil.

Hydraulic Press: This type of press uses static liquid pressure to squeeze oil from the material. It is ideal for oil-rich seeds like sesame or walnuts and is considered a "cold" method because it does not create heat. This process preserves the natural nutrients and taste of the oil, making it suitable for high-quality cold-pressed products. The oil produced is often very clear, though the trade-off is a lower yield compared to a screw press.



Hot Pressing vs. Cold Pressing:

The primary distinction between these methods is the use of heat prior to extraction.

Hot Pressing involves heating or roasting seeds before they enter the press. This heat breaks down the material's cellular structures, reducing oil viscosity and allowing it to flow more freely. This process can yield significantly more oil—sometimes nearly double that of cold pressing. However, the heat may alter the flavor and color of the final product.

Cold Pressing omits the pre-heating step, producing a purer, higher-quality oil but leaving more oil behind in the press cake, resulting in a lower yield. The choice between methods depends on whether the primary goal is maximizing quantity or achieving a specific product quality.

Temperature and Pressure Control:

In hot pressing, temperature must be carefully regulated to prepare the seeds without cooking them. For instance, some processors heat peanut kernels to around 130° C to maximize oil flow. The pressure applied during extraction is also critical. Most expeller presses use an adjustment mechanism to control the pressure inside the barrel. Different materials require different levels of pressure. A properly adjusted press will produce a thin, hard, and very dry press cake, indicating efficient oil extraction. If the cake is thick or greasy, it suggests that pressure should be increased to extract the remaining oil.



3. Equipment Maintenance

The condition of the oil press is essential for achieving consistent and stable yields. A neglected machine operates inefficiently. Worn components, such as the press screw, cannot generate the necessary pressure for complete extraction. Likewise, clogged filters or outlets can cause oil to back up and be reabsorbed into the press cake. Regular cleaning, inspection, and maintenance are investments that ensure the equipment performs optimally.

Key Recommendations for Improving Oil Yield

Select Superior Raw Materials: Begin with crop varieties specifically bred for high oil content.

Clean and Prepare Thoroughly: Sift materials to remove all foreign debris and impurities. Dehusk or shell nuts to ensure the press only processes oil-rich kernels.

Optimize Moisture Content: Dry seeds and nuts to an ideal moisture level, generally below 7%, to prevent emulsions and improve extraction efficiency.

Choose the Appropriate Pressing Method: Use hot pressing to maximize oil quantity or cold pressing to prioritize oil quality.

Fine-Tune Press Settings: Carefully control the temperature during hot pressing and adjust the machine's pressure to match the specific type of seed being processed.

Monitor the Press Cake: The cake should be hard, thin, and dry. A mushy or oily cake indicates inefficient extraction and the need to adjust pressure.

Maintain Equipment Regularly: Consistently clean your oil press and check for worn parts to ensure it runs at peak efficiency.

About Us

At GQ Agri, we specialize in providing robust and efficient oil pressing solutions tailored to your operational needs. Understanding and optimizing the factors that influence oil yield is key to maximizing your profitability.

To help you benchmark your performance and plan effectively, we invite you to contact us today. Our team can provide detailed statistical reference tables for the typical oil yield ranges of various crops, as well as comprehensive oil pressing profitability guides to support your business.