



Unit 5 – Topic 6

Millets and Winnowing - Oil seed processing

Millets are a group of small-seeded grasses that are cultivated as cereal crops. They are known for their nutritional value, hardiness, and adaptability to diverse climatic conditions. Common types of millets include pearl millet, finger millet, proso millet, foxtail millet, and barnyard millet. Millets are gluten-free and rich in nutrients, making them an important food source, especially in regions with challenging growing conditions.

A winnowing, on the other hand, is a device used in agriculture to separate the lighter chaff or husk from the heavier grains during the threshing process. This separation is crucial for obtaining clean, edible grains. Winnowers are commonly employed in the processing of various cereal crops, including millets.

Here's how the winnowing process typically works:

1. **Threshing:** The first step involves separating the grains from the stalks or panicles. This can be done manually or using mechanized threshing equipment.
2. **Winnowing:** Once the grains are separated from the chaff through threshing, the mixture of grains and chaff is tossed into the air. The lighter chaff is carried away by the wind, while the heavier grains fall back to the ground. This process relies on the difference in weight between the grains and the chaff.
3. **Collection:** The cleaned grains are collected, and the separated chaff is discarded.

In the context of millets, winnowing is particularly important because millet grains are small and often surrounded by a protective husk or outer layer. The winnowing process helps remove this husk and other impurities, leaving behind clean millet grains ready for further processing or consumption.

The use of winnowers has become more efficient with modern agricultural practices and machinery. Mechanized winnowing equipment, such as motorized winnowers or combine harvesters, streamlines the process and increases overall efficiency in separating grains from chaff. This is crucial in large-scale millet production, where efficient post-harvest processing is essential for obtaining high-quality millet grains.



Oilseed processing

Oilseed processing is a series of steps that convert oilseeds into edible oil, animal feed, and other products. Oilseeds are crops that contain a significant amount of oil within their seeds. Common oilseeds include soybeans, canola (rapeseed), sunflower seeds, cottonseeds, peanuts, and sesame seeds. The process of extracting oil from these seeds involves various stages, and the specific methods can vary depending on the type of oilseed and the desired end products. Here is a general overview of oilseed processing:

- Cleaning:**
 - The first step is to remove impurities such as dirt, stones, and other foreign materials from the harvested oilseeds.
- Cracking and Dehulling:**
 - Some oilseeds have hard outer shells or hulls that need to be removed. Cracking and dehulling involve breaking the outer layer to access the seed inside. This is common for oilseeds like sunflower seeds.
- Cooking/Conditioning:**
 - The oilseeds are often heated to a specific temperature in a process known as cooking or conditioning. This heat treatment helps in loosening the oil-bearing cells and making the oil extraction process more efficient.
- Flaking or Rolling:**
 - The conditioned oilseeds are then passed through a flaking or rolling process. This step involves flattening the seeds to increase the surface area for oil extraction.
- Oil Extraction:**
 - The oil is extracted from the prepared seeds. Common methods include mechanical pressing, solvent extraction, and cold pressing.
 - Mechanical Pressing:** Involves using mechanical presses to squeeze the oil out of the oilseed. This method is common for oilseeds like sunflower seeds and soybeans.
 - Solvent Extraction:** Uses solvents (usually hexane) to dissolve and extract the oil from the oilseed. This method is widely used for oilseeds with low oil content.
 - Cold Pressing:** This method involves pressing the oil out of the seeds without the use of heat or chemicals. It is often used for producing high-quality, unrefined oils.
- Oil Refining (Optional):**
 - Depending on the desired end product, the extracted oil may undergo refining processes to remove impurities, color, and undesirable flavors. This is common for oils intended for human consumption.



7. **Degumming, Neutralization, Decolorization, and Deodorization:**
 - These are common steps in the refining process, each addressing specific aspects of oil quality.
8. **Filtering:**
 - The oil is filtered to remove any remaining particles or impurities.
9. **Packaging:**
 - The final oil is packaged for distribution and sale.

Throughout the oilseed processing journey, by-products such as oilseed cake or meal are generated. These by-products are often used as animal feed or as ingredients in various food products. The choice of processing methods depends on factors such as the type of oilseed, the oil content, and the intended use of the oil.

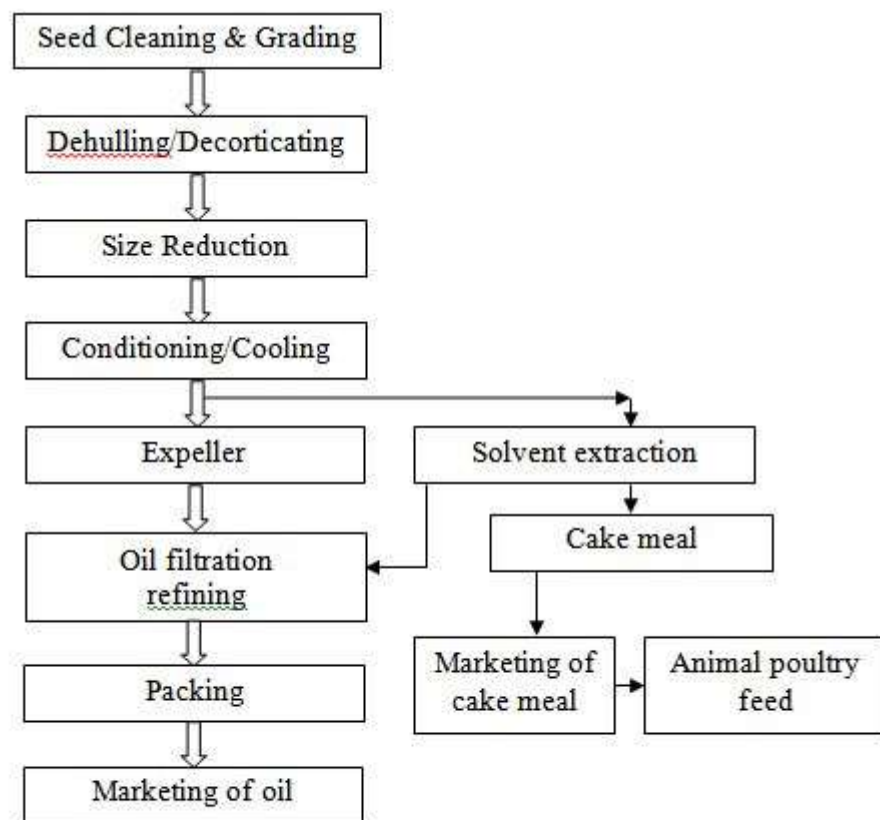


Fig. 7.1 Process flow chart of oil seeds processing