

1. Grading

grading is “the assessment of the overall quality of a food using a number of attributes.

Grading is classification on the basis of quality and hence requires that some judgment on the acceptability of the food is made, based on simultaneous assessment of several properties, followed by separation into quality categories. Appropriate inspection belts or conveyors are designed to present the whole surface to the operator. Trained manual operators are frequently used to judge the quality, and may use comparison to charted standards, or even plastic models. For example, a fruit grader could simultaneously judge shape, color and evenness of color in apples. Machine grading is only feasible where quality of a food is linked to a single physical property and hence a sorting operation leads to different grades of material. Size of peas, for example, is related to tenderness and sweetness, therefore size sorting results in different quality grades. Grading of foods is also the determination of the quality of a batch.

2. Peeling

Peeling of fruits and vegetables is frequently carried out in association with cleaning. Mechanical peeling methods require loosening of the skin using one of the following principles, depending on the structure of the food and the level of peeling required.

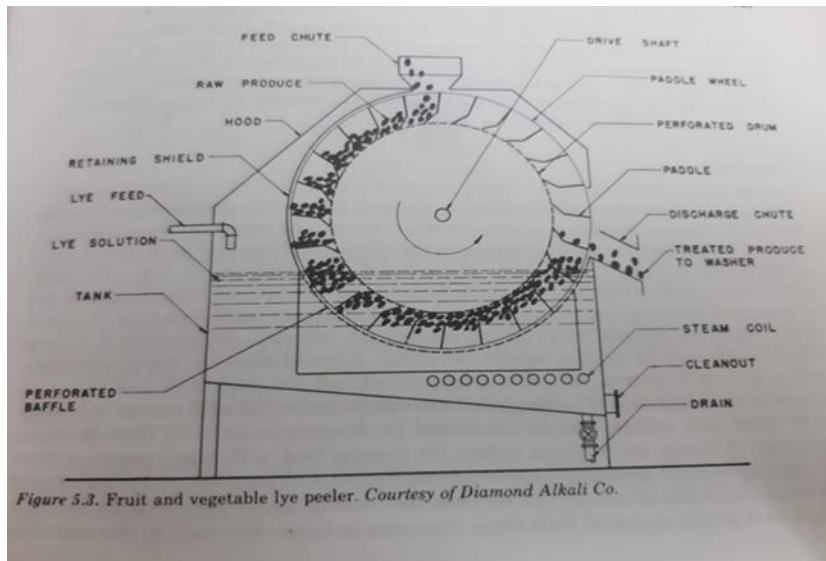
2.1 Methods of Peeling

2.1.1 Steam peeling

Steam is particularly suited to root crops. The units are exposed to high pressure steam for a fixed time and then the pressure is released causing steam to form under the surface of the skin, hence loosening it such that it can be removed with a water spray.

2.1.2 Lye Peeling

Lye (1–2% alkali) solution can be used to soften the skin which can again be removed by water sprays. There is, however, a danger of damage to the product.



2.1.3 Abrasive Peeling

Abrasion peeling employs carborundum rollers or rotating the product in a carborundum-lined bowl, followed by washing away the loosened skin. It is effective but here is a danger of high product loss by this method.

2.1.4 Hand Peeling

Mechanical knives are suitable for peeling citrus fruits. Mangoes are still hand peeled at industry.

2.1.5 Flame Peeling

Flame peeling is useful for onions, in which the outer layers are burnt off and charred skin is removed by high pressure hot water.

Flame Peeler



A. Onions before flame peeling



B. Onions after flame peeling

3. Removal of inedible constituents

3.1 Coring:

Fruits like pineapple have a central core, which although edible in some cases, must be removed during processing. Removal of this core is termed as coring.

3.2 Pitting:

Dates and plums have pits or seeds located in center. The removal of this seed is done in an operation known as pitting and special pitting knives are used for this purpose.

3.3 Stemming

Some raw materials may be plucked with stems. Examples are tomatoes and strawberries. Removal of the stem is known as stemming. It is usually done by hand or vibrating screens are used. A mild heat treatment helps easy removal of stems.

3.4. Trimming

Trimming involves discarding of discolored, decayed or damaged portion of the raw material and is usually done after other preliminary operations have been completed. Green or under ripe portions, damaged/decayed parts, over ripe and bruised portions of raw materials or the eyes in potatoes are removed during trimming.