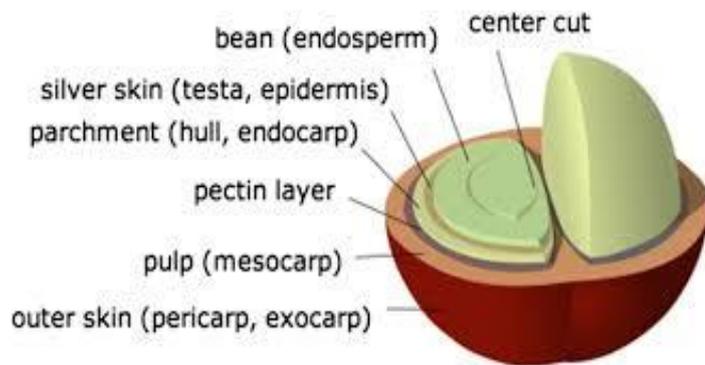


# POST HARVEST MANAGEMENT OF COFFEE

Coffee is processed either by wet method to produce plantation/parchment coffee or by dry method to obtain cherry coffee and both these processing methods involve



skill as well as science. For preparation of both these types, picking of fruit at the correct stage of ripening (just ripe berries – on gentle squeezing the fruit, the beans inside pop up easily) is essential. Over or under ripe berries will result in poor cup quality after processing. If, for any reason coffee can't be harvested as when it ripens, the over and under ripe fruits and also green fruits should be sorted out and processed separately as cherry. Just ripened berries are ideal for pulping to prepare washed/ parchment coffee.

The yield of coffee depends upon variety, management practices, location etc. The average Robusta yields varied between 1000 and 1200kg/ha under un-irrigated conditions and 2000 and 5000 kg/ha under irrigated conditions in different zone irrespective of the variety.

## Parchment coffee

### **1). Pulping**

This method requires equipment and adequate supply of clean water. Fruits should be pulped on the same day to avoid fermentation before pulping. Fruits may be fed to the pulper through siphon arrangement to ensure uniform feeding and to separate lights and floats from sound fruits. The pulped parchment should be sieved to eliminate any un-pulped fruits and fruits skin. The skins are separated by pulping should be let away from the vats into collection pits so that microbial

decomposition of the skin will not affect the bean quality when it gets mixed up with the bean.

## **2) Demucilaging and washing**

The mucilage on the parchment skin can be removed by

### **A) Natural fermentation**

The mucilage breaks down in the process of fermentation and it takes 24-36 hours for arabica and 72 hours for robusta. Cool weather delays the process of fermentation. Under fermented or over fermented beans affect quality. When correctly fermented the mucilage comes off easily and the parchment does not stick to the hand after washing and the beans feel rough and gritty when squeezed by hand. When the mucilage breakdown is complete, clean water is let in and the parchment washed pebble clean with three to four changes of water.

### **B) Treatment with alkali**

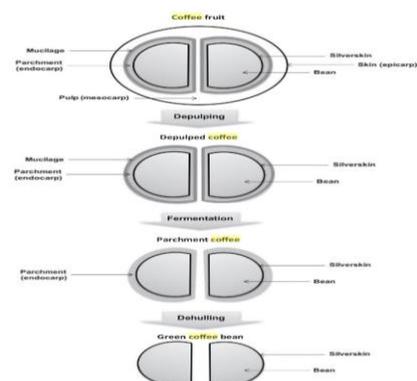
Removal of mucilage by treatment with alkali takes about one hour for arabica and one and a half to two hours for robusta. The beans obtained after pulping are drained off excess water and spread out in the wax uniformly and furrowed with wooden ladles with long handles. A 10% solution of caustic soda (NaOH) is evenly applied into the furrows using a water can. 10 litres of alkali is sufficient to treat 25-30 forlits (1 forlit = 40 litres) of parchment. The parchment is agitated thoroughly by the ladles so as to make the alkali to come into contact with the parchment and trampled by feet for about half an hour. When the parchment is no longer slimy and makes a rattling noise, clean water is let in and the parchment washed clean with 3 or 4 changes of water.

### **C) Removal of mucilage by friction**

There are machines, which pulp and demucilage the beans in one operation. However, a number of naked and bruised beans may result in the parchment. It is, therefore, necessary to adjust the machines carefully to obtain uniform pulping and demucilaging. Cup-test results have indicated that there is no difference in cup quality coffee processed by different method.

### 3. Drying

The next stage is drying the parchment in the sun until the moisture content is sufficiently reduced to permit storage of beans till they are dispatched to curing works. Proper drying contributes to the healthy colour of the bean and other quality factors. Under dried parchment turns mouldy and gets bleached storage and subsequent curing operations. The parchment is spread on clean tiled or concrete drying floor to be dried slowly by spreading to a thickness of about 7 to 10 cm. stirring and turning over coffee, at least once an hour, is necessary to facilitate uniform drying. The parchment should be heaped up and covered in the evening until next morning. Sun drying may take about 7 to 10 days under bright weather conditions. At the right stage of dryness the parchment becomes crumbly and the beans split clean without a white fracture when bitten between the teeth. Drying is complete when a sample forlit of coffee records the same weight for two days consecutively. At this stage, coffee is shifted to the stores and bagged in clean, new gunnies. When coffee is being a dried, all naked bean, pulper nipped and



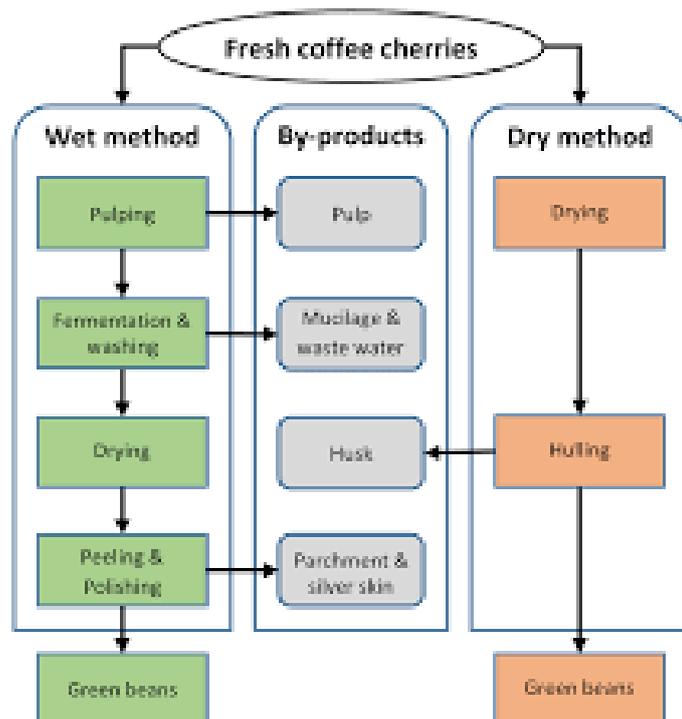
When coffee is being a dried, all naked bean, pulper nipped and

bruised beans, blacks, greens and other defective beans are sorted out and dispatched to curing works separately.

## Cherry coffee

For preparation of cherry coffee fruits should be picked, as and when they ripe. Green and under-ripe should be sorted out and dried separately. The fruits should be spread evenly to a thickness of about 8 cm on clean drying ground in which the cherries are stirred and ridged at least once every hour. The cherry is dry when a fistful of the drying cherry produces a rattling sound when shaken and a sample forlit records the same weight on two consecutive days. The cherry should be fully dry at the end of 12 to 15 days under bright weather conditions. In India most of the Arabica coffee is processed as parchment coffee while bulk of Robusta coffee is made as cherry coffee. After drying coffee should be packed in gunny bags and stored on raised wooden platform in well ventilated and dry store house. The parchment and cherry coffee should not be stacked together. It is advisable to dispatch the dried coffee to curing factories at the earliest possible.

Subsequent processing of both these types is carried out mechanically at curing factories. At curing houses, the parchment coffee is hulled, graded (based on size standards of beans) and polished. The cured coffee is called green coffee which is traded in the market. Coffee quality is a cumulative index of many characteristics of



coffee such as physical appearance in the raw and roast as well as liquor qualities like aroma, body and acidity in the cup.

## Treatment of coffee processing effluents

Preparation of parchment coffee involves the usage of high amount of water and it is estimated that for wet processing of one tone of clean coffee by using conventional pulper and washer, the water requirement is 80,000 litres for Arabica and 93,000 litres for Robusta. The resultant waste water cause pollution problems as these effluents contain high amount of suspended and dissolve organic solids. Their pollution load measured in terms of BOD (biological oxygen demand) ranges from 2.5 to 12g/litre. Hence it is recommended that coffee effluents should be subjected to biological treatment methods involving anaerobic digestion followed by aerobic lagooning in order to treat high strength organic waste.

