

Table 23.1 Bean blends influencing quality.

Product type	Bean selection
Milk chocolate	Africa, South America, Pacific areas
Light milk chocolate	Java, Cameroon, Madagascar
Dark chocolate	South America, West indies, special select beans
Cocoa butter	Africa, Pacific areas, West Indies
Cocoa powder	Africa, Pacific areas, West Indies

Example of a quality procedure: Cut test

- 1 The bean count per 100g should be calculated to include all estimates on partial beans, shells and nibs.
- 2 Flats and shrivelled beans will be recorded as one and the same as the number per 100g (not as a percentage).
- 3 Cut 100 beans either by a knife or using a guillotine.
- 4 All trash (twigs, stones and other non-bean plant material) should be noted as number of pieces (recorded as trash).
- 5 The number of fermented beans may be obtained by adding up all fully brown beans; purple and brown-purple would be separated out and used to determine a bean type specific attribute; yellow, pink and white beans would be considered unfermented (omit mouldy, slaty, flat, infested and trash from this total) and subtract their sum from 100.
- 6 Yellow mould or black mould should be noted separately. Example: count beans with yellow mould and record, then count the rest of the mouldy beans and record weight. Mould is expressed as yellow mould and total mould.

Beans are examined based on this cut test to let the evaluator know if the beans are the size that will process well and not have a large amount of waste or shell. The perfect cocoa bean is one that is large in size with a very thin shell for protection and ease of removal. The inside of a perfect bean depends on the exact origin of that cocoa bean to provide precursors to develop the cocoa flavour desired. For example, Ivory Coast beans give a sour, mild chocolate flavour, whereas Ecuadorian beans can produce a fruity, full flavour chocolate. The amount of fermentation will dictate if a cocoa bean is sour, winery or fruity. Unfermented cocoa beans tend to have more astringent flavour, shell removal is more difficult and they lack cocoa notes, but they still can be utilised as cocoa beans for cocoa butter and cocoa powders. Over-fermented cocoa beans can be very dark in colour, putrid and undesirable. The food defect action levels (DALs) for cocoa bean cut tests are shown in Table 23.2.

The Food Safety Modernization Act (FSMA), signed into legislation in 2011, is the most sweeping change to the United States food safety system since 1938. All foreign suppliers must meet the same stringent United States Food and Drug Administration (FDA) requirements. FDA is a government agency established in

Table 23.2 FDA defect action level.

Defect	Action level
Mould	<4%
Infestation	<4%
Total mouldy and infested	<6%
Degree of fermentation	Bean type dependent
Moisture	<8%
Count per 100g	Bean type dependent



Figure 23.1 De-shelled cocoa beans.

1906 with the passage of the Federal Food and Drugs Act. The agency is currently separated into five centres, which oversee a majority of the organisation's obligations involving food, drugs, cosmetics, animal food, dietary supplements, medical devices, biological goods and blood products.

The Codex Alimentarius Commission, established by FAO and WHO in 1963, develops harmonised international food standards, guidelines and codes of practice to protect the health of the consumers and ensure fair practices in the food trade. The Commission also promotes coordination of all food standards work undertaken by international governmental and non-governmental organisations.

Cocoa bean samples are pilot roasted, de-shelled and ground into chocolate liquor for flavour evaluation, a critical quality investigation step (Figure 23.1). Free fatty acid (FFA) testing may also be performed to indicate freshness or how