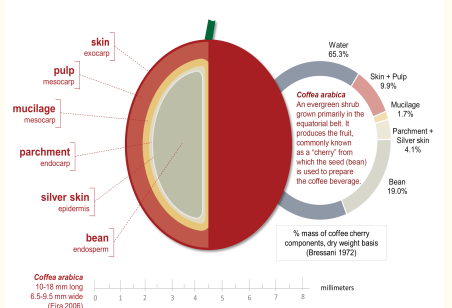


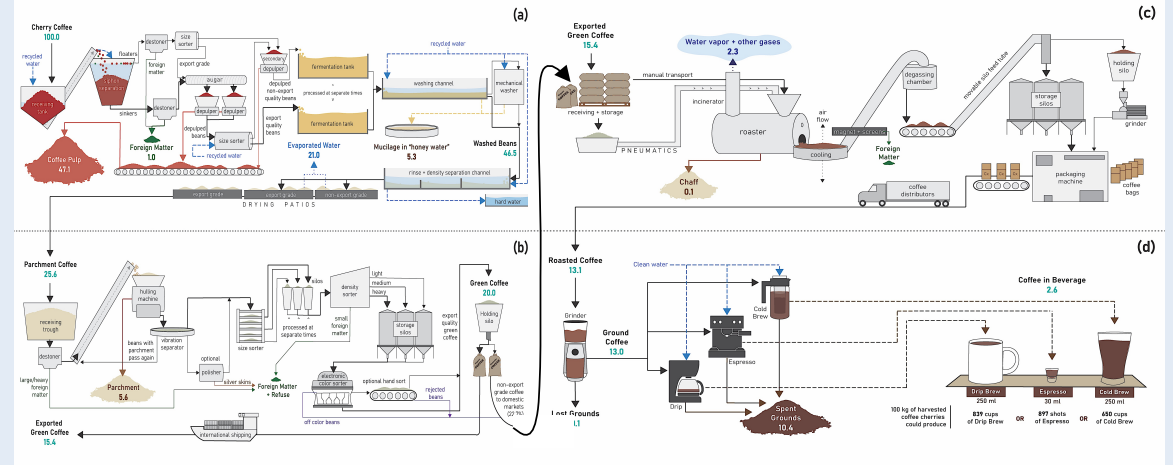
## Introduction

**Figure 1:** Composition of a coffee (*Coffea arabica*) cherry (controlled conditions, and laboratory measurements), describing layers with botanical terms, typical size, and % of mass on a dry-weight basis, as reported by Bressani et al. (1972).



**Materials/Methods** Detailed surveys of real-world commercial wet (n = 15) and dry (n = 12) mills in Central America and Mexico, and roasters (n = 3) in the US were performed to produce representative process flow diagrams and to determine how an initial 100 representative mass units of freshly harvested coffee cherries is distributed across the entire chain (from harvest to consumption).

## Results/Discussion



**Figure 2:** Process flow diagram (PFD) for the washed method of postharvest coffee processing as seen in Central America, Mexico and the US. Phases are: (a) wet mill, (b) dry mill, (c) roastery (d), and café processes. Inline numbers represent mass units (and also, in this case, a percentage of the initial harvest mass). Some numbers do not sum due to rounding.

**Conclusion/Perspectives** Coffee postharvest processes and its related distribution chains are complex. A key finding of this study is that mass loss at multiple steps is higher than previous laboratory measurements. Further research may ascertain the reasons for this difference, whether inefficiencies in processing practices, variability in the ratio of fruit to seed mass in the coffee varieties tested, or other causes. Only a small fraction of harvested coffee mass is consumed by humans (2.6 % for washed export-quality coffee), suggesting that challenges and opportunities exist in the management and potential valorization of 26 billion kg of coffee byproducts annually. Depending on the type of byproduct, which are currently mainly considered waste, can be potentially valorized into compost, energy production, reutilized as biomolecules for other applications, wastewater cleaning agents, and food and/or beverages for animal or human consumption.

**References**

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