

Coffee Processing Waste Management

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INTRODUCTION

The key steps in the wet coffee process are: removal of the outer skin from the coffee bean by pulping; pre-grading the coffee beans; release of the mucilage covering the coffee bean by fermentation; washing and grading the mucilage free coffee bean according to its density in water; sun drying the coffee bean over 10-14 days and temporary storage of dry coffee. This system is characterised with: the excessive consumption of water (at each stage of the process), which generally varied greatly from 59-105m³ (Mburu et al., 1994) and 24-114m³ (Finney, 1990) of water per tonne of dry parchment; the contamination of water due to inappropriate design of waste treatment pits; the generation of large amounts of waste pulp and seepage of contaminating leachate from pulp heaps into the environment. Surveys in the early 1990s showed that some rivers in the coffee growing areas had BOD values ranging between 14 and 55 mg/litre (Mwaura, 1995) instead of a maximum of 6mg/litre (WHO guideline for drinking water).

To overcome the problems related to the disposal of the wet coffee processing wastes, a research project was conducted in Kenya between 1993-1997 (Wood et al., 2000). Its specific research objectives were to: conduct an environmental impact assessment (EAI) of the coffee industry; identify procedures for reducing water usage and effluent discharges in process operations; evaluate current effluent treatment systems, identify the wastewater components that contribute to the largest negative impact and develop improved treatment technology and; develop a practical protocol for water conservation and reduction in water pollution in accordance with the requirements of the water Act of Kenya 1972.