

Constraints and Compliances of Traceability in Low Grown Orthodox Black Tea Manufacturing Process

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Abstract Traceability practices and their compliances in low grown orthodox black tea manufacturing process were examined, while proposing possible solutions for identified major drawbacks. The physical traceability in supply chain was considered one step forward and one step backward from the point of manufacturing, starting from auction/buyer back to supplier. Randomized stratified sampling was used. The traceability was evaluated using a checklist, end product sampling, open ended interviews, observations and internal document studies. The orthodox process was more complicated unlike other production processes due to the different separation techniques employed for grading and variety of grades produced because the sifting/grading was the key to number of different tea varieties. Major traceability issues were observed in leaf collection and grading operations due to complexity of separation through Myddleton, Chota, Michie and Winnower, which reduced the specific amounts produced, where bulking and blending process further extended complexity, while increasing the mixing of different made tea together with increased number of suppliers. Considering 1st, 2nd, 3rd dhool and big bulk with given separation techniques during grading; a single tea leaf could pass many paths before it end up in a specific product due to weight, size and shape of the leaf of a shoot based on the way it was rolled in orthodox rollers, where traceability up to tea bush, grading, blending and traceability of sample back to supplier was not fully complying. Nevertheless, supplier records, traceability after packing, traceability at dispatch and after dispatch were in full compliance, and other factors had varying degree of traceability compliances which make the compliances unachievable. Alternatively, if made tea is considered as bulk material, use of emerging technologies like Radio Frequency Identification (RFID) tags or/and DNA barcoding may be potential tools in rectifying such drawbacks and further research is needed to assess their efficacy in the field.

Keywords: orthodox black tea, manufacturing, traceability, compliance, Myddleton shifter, supplier, grading, dhool

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1. Introduction

Tea was known as a beverage at least for over 5000 years, it was initially considered as a medicine and later grew into a beverage which finally became the most popular beverage in the world or the second most important drink after water [1]. According to the Chinese legends, tea was first discovered in the time of Second Emperor and herbalist, Shennong in 2737 B.C.E, accidentally when a dried tea leaf was fallen into the boiling water which was intended for quenching emperor's thirst; who drank boil water as a habit, while he was travelling to another region.

The commercial planting of tea in Sri Lanka was introduced by a Scotsman, James Taylor in 1867 [2]. Since then the Ceylon Tea has been the world's number one brand for over a century and the local tea industry has

made a significant growth over the time while securing its position in the global market as a leading producer and exporter of high quality black tea. In terms of international trade, tea is one of the major export revenue earners for the country, where thousands of lives are depending on it directly or indirectly. In 2007, Sri Lanka was the fourth-largest tea-producing country according to global production statistics and the country has produced 318,470 tons of tea which contributed nearly 9.1% of the world's total tea production [3].

Nevertheless, country has dedicated over 221,000 hectares or approximately 4% of the total land area for tea cultivation [4]. Accordingly, Sri Lankan tea plantations can be categorized as large plantations as well as smallholdings and there are approximately 118,274 hectares of smallholdings with 397,223 smallholdings [5] out of the total land cultivated; around 43% is managed by the corporate sector, with a production of about 35%, while the balance of 57% is in the smallholder sector, with