

MICROBIAL STATUS OF TEA (*Camellia sinensis*) DURING
DIFFERENT STAGES OF PROCESSING IN UP COUNTRY

U.G.A.I. Sirisena¹, A. Balasuriya², P.A. Weerasinghe¹, J.P. Keerthisinghe³,
J.W.K.K. Jayasundara²

¹Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Anuradhapura, Sri Lanka.

²Tea Research Institute of Sri Lanka, Talawakele, Sri Lanka.

³Faculty of Agriculture, University of Peradeniya, Sri Lanka.

A study was conducted at Tea Research Institute of Sri Lanka, Talawakelle to evaluate the microbiological variations of tea in different stages of processing using standard techniques. Quad replicate samples were taken from intact leaves, pre-withering, post-withering, pre-fermentation, post-fermentation, post-firing and from the made tea grades of BOP, BOPF, PEKOE and dust 1. The experiment was repeated three times at one month intervals under variable climatic condition.

Microbial levels of intact leaves varied with season/time (temporal) with a heavy dependence on sunshine and rainfall. Bacterial colony counts of intact leaves were highly correlated ($r^2=0.8$) with cumulative sunshine hours while fungal populations were positively correlated ($r^2=0.6$) with the average ambient relative humidity.

Bacteria contamination levels were very high at pre-withering and pre-fermentation steps. The level of bacterial colony counts at pre-withering was positively correlated with the final grades of tea. Yeast and mould levels were very low at the initial stages though very high during fermentation. The amount of yeast and moulds at pre- and post-fermentation steps, directly influenced the amounts in the final grades.

Firing of tea dhools reduced all microbial populations drastically, falling short of a complete eradication. Withering and fermentation steps were identified as the critical points where microbial contaminations take effect.

Key words: Tea, Microbes, Contaminations, Critical Points