

Assessing Quality Variation of Tea and Ammonia Emission from Tea Fields with Different Fertilizer Management Methods

Thathsara.Y.K.R. and Nissanka N.A.A.S.P.*

Department of Crop Science,
Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka

Nitrogen (N) is the main element of the tea sector that affects the tea yield. Fertilizer costs represent 8-12% in the tea sectors and the nitrogen use efficiency (NUE) of applied fertilizer in tea is less than 40% and the rest being lost to the environment. Therefore, it is essential to find ways to improve NUE while enhancing the green leaf production. This study was initiated to investigate the impact of different fertilizer mixtures on the productivity and quality of green leaves and the emission of ammonia. A field experiment was conducted in VP tea fields of TRI 2025 (*Camellia sinensis* L. (Kuntze)) in Diyanillakale Estate, Lindula, Nuwara-Eliya. Five fertilizer treatments (T1- No Nitrogen; T-2 TRI recommended 100% U709 (200kg /ha/3 months); T3-75% of TRI recommended nitrogen portion; T4-75% of TRI recommended nitrogen portion + CIC Bio-carbon Hybrid (40kg/acre/3 months); T5-75% of TRI recommended nitrogen portion + DCD+NBPT) were assessed. Growth and yield production of green leaves and ammonia emission was measured about three months after applying the fertilizer treatments in August 2022. Results showed that there was no difference ($P>0.05$) in Ammonia emission among treatments and the overall emission was around 2% of the total N applied. Cumulative green leaf production for the study was higher in TRI 100% (T2) and TRI 75% of N portion + CIC Bio-carbon Hybrid (T4) treatments. The SPAD meter readings were higher in TRI 100% treatment. There was no difference ($P>0.05$) in leaf Polyphenol content, leaf photosynthetic efficiency and Banji weight among treatments. Overall results suggest that N requirement could be reduced by 25% with amending the U709 with CIC Bio-carbon Hybrid.

Keywords: Nutrient use efficiency, Nitrogen losses, Tea, Tea Research institute, upcountry

*spn@agri.pdn.ac.lk