

Evaluation of two methods of nitrogen determination in rice plant

ABSTRACT

Grain and straw samples were collected from rice plants grown under 12 different fertilizer treatments in a greenhouse experiment conducted in two soils (Idris and Tebengau series). The samples were analyzed for total nitrogen (N) content using the both conventional and rapid methods. Nitrogen contents in both grain and straw were slightly higher with the rapid method compared to the conventional method. Estimated relationship between the methods was linear for both grain and straw N contents with highly significant R^2 (coefficient of determination) values. The R^2 values were 0.7363 and 0.8208 for grain and straw N contents, respectively. The advantages of the rapid method over the conventional method were: (i) less time was required for digestion, and (ii) distillation and titration steps were not required. In the conventional method, titrate was used for ^{15}N analysis, while it could not be done in the rapid method. Based on this comparative study, it can be concluded that rapid method should be used instead of conventional method to save time if only total N is analyzed. But if total N along with ^{15}N is analyzed, conventional method should be used.

Keyword: N determination; Rice plant; Conventional method; Rapid method; ^{15}N tracer