Abstract No: 112 *Plant Sciences and Forestry*

Assessing the impact of stabilized urea on nitrogen use efficiency of irrigated rice (*Oryzasativa* L.)

H.G.J.T. Kumara[1], S.P. Nissanka[1*], M. Gunawardane[2] and S. De Z. Abeysiriwardane[3]

[1]Department of Crop Science, Faculty of Agriculture, University of Peradeniya, Sri Lanka, [2]SLINTEC, Nanotechnology and Science Park, Homagama, Sri Lanka, [3]CIC Agri Businesses (Pvt) Ltd, Dambulla, Sri Lanka
[*]spnissanka@gmail.com

Agronomic efficiency of N (AE_N) in rice cultivation ranges from 15 to 40 % due to heavy losses of applied N. Dicyandiamide (DCD) and N-(n-butyl) thiophosphorictriamide (NBPT) are used for some crops to enhance the efficiency of urea fertilizer and to reduce ammonia volatilization, respectively. The DCD and NBPT were evaluated in combination with different levels of the recommended rate of urea by the Department of Agriculture (DOA), Sri Lanka to examine the AE_N in irrigated rice (*Oryzasativa*L.) conducting a field experiment at the intermediate zone (Palwehera, CIC farm). The experiment was a two factor factorial where factors were N fertilizer with three levels (50%, 75% and 100% of the Department of Agriculture (DOA) recommended rates (225 kg Urea/ha)) in the form of urea, and inhibitor compounds with four levels (no inhibitors, only NBPT, only DCD and combination of NBPT + DCD) and a control of no N fertilizer added, arranged in a Randomized Complete Block Design (RCBD) with three replications. The DCD and NBPT rates were 10 % and 1 % of the amount of urea used, respectively. Results showed an 11 % yield and 2.38 fold AE_N increments in 50 % urea applied treatment with both inhibitors, compared to 100 % urea without inhibitors (3.83 mt/ha; $AE_N$of 21%).Grain protein content was 20 % higher in DCD-amended urea compared to urea alone. Benefit: cost ratio was the highest when 50 % urea was amended with NBPT (9 % yield advantage than 100 % urea alone). Thus, application of urea with DCD and NBPT alone or in combination leads to a significant increase in grain yield and AE_N while reducing the amount of urea application to an half.