GROWTH AND YIELD OF BIG ONION (*Allium cepa. L)* ON FERTILIZER NITROGEN IN RBE SOIL

R.M.S.K. Rajakaruna[1], K.A. Renuka[2]and R.M.P. Rajakaruna[1]

[1]Department of Soil and Water Resources Management, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura.
[2]Field Crops Research and Development Institute, Mahailuppallama.

Big Onion (*Allium cepa* L.) is one of most the important condiment in Sri Lanka with the annual demand 203,993 mt. Nutrient supply basically affected on growth and yield of onion. Inadequate N fertilizer recommendation (90 kg ha^{-1}) by the Department of Agriculture is a major field level complain. A field experiment was conducted at the Field Crop Research and Development Institute, Mahailluppallama in Reddish Brown Earth soil to find out the optimum N fertilizer requirement for higher Big onion yield under supplementary irrigation. Five treatments namely; no N (T_1), 45 kg $ha^{-1}$of N (T_2), 90 kg ha^{-1} of N (T_3), 135 kg $ha^{-1}$of N (T_4) and 180 kg ha^{-1} of N (T_5) arranged in Randomized Complete Block Design with four replicates. Application of plant nutrients and other cultural practices were performed as recommended by the Department of Agriculture. Growth parameters, plant height and number of leaves per plant were measured at six weeks after planting. Total and marketable bulb yield, and bulb diameter were measured at harvesting. Soil total N contents were analyzed before establishment of the study, six weeks after planting and just after harvesting. Plant total N content of Big onion was measured at six weeks after planting. Results revealed that increased N fertilizer significantly improved yield and growth parameters of onion except number of leaves per plant. Maximum values of plant height (36.2 cm), bulb diameter (4.8 cm), total bulb yield (63.16 t ha^{-1}) were recorded in treatment supplied with 180 kg ha^{-1} (T_5) N fertilizer, while maximum marketable bulb yield (56.2 tha^{-1}) was obtained in treatment supplied with 135 kg ha^{-1} (T_4) N fertilizer. However, no significant variation was observed in parameter tested between treatment T_4 and T_5, therefore concluded that the optimum N fertilizer level for Big onion growth and yield in RRE soils was 135 kg ha^{-1}(T_4).

***Key words*:** Big onion, Growth and yield, Nitrogen, Reddish Brown Earth soils