909/B

Identification of the adaptable Beet (*Beta vulgaris*) varieties for reduced Nitrogen under in vitro condition

A.S. Jathunarachchi, B.U.C. Batangala, D.R. Gimhani and P.I.P. Perera*

Faculty of Agriculture and Plantation Management, Wayamba University of Sri Lanka, Makandura, Gonawila (NWP), 60170, Sri Lanka

Nitrogen (N) is an essential nutrient required for the growth and development of plants, which eventually affects yield. However, an oversupply of N fertilizer causes a negative environmental impact and increases the cost of production. Kalpitiya is an agricultural region that has sandy regosol soil liable to nitrate leaching. Due to the infertility and higher leaching caused by sandy soil, farmers tend to apply N fertilizers frequently, that is leading to groundwater contamination and influencing human health. Therefore, long-term sustainable agricultural practices are required to overcome this problem. Crop varieties have to be selected which can bear low N levels and have higher use efficiency. Hence, we conducted the present study to evaluate three commercially grown beet varieties (Red atlas, Royal red, Maravillaandina) for low N under laboratory conditions. Beet is one of the highly cultivated crops in Kalpitiya region. The seedlings were grown in an artificial growing medium containing the different supplements of the N containing nutrient. We recorded growth parameters of number of leaves, number of roots, shoot length, root length, and dry weight at the end of 30 days. After analyzing the collected data, we found that the variety Maravillaandina showed higher adaptability by performing a better growth under low N levels. The variety Red atlas was easily affected by the reduced N levels by showing reductions of all the parameters except the dry weight of the plant. In Royal red an equal growth was observed in the number of roots, shoot and root length in all the tested N levels. Therefore, we identified Maravillaandina as the best variety under laboratory conditions among the tested three varieties. However, it has to be tested under field conditions to determine its actual performance.

*prasanthi@wyb.ac.lk