

ABSTRACT

Growth, Development and Leaf Yield of Dasheen (*Colocasia esculenta* var *esculenta*) in response to changes in plant density, nitrogen and frequency of harvesting

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A series of studies to determine growth, development and leaf yield response of the dasheen cultivar 'Blue' in response to changes in plant density, nitrogen and frequency of harvesting was undertaken. Two field studies were conducted and carried out to determine the nutritional quality of the harvested leaves as affected by N application and plant density. The effects of three harvesting frequencies on plant growth and leaf yield were studied in a third experiment.

Plant density was found to have a significant effect on leaf yield. Total leaf yield increased by 58 per cent with an increase in plant density from 15,000 to 250,000 plants/ha. The relative increase in leaf yield at close density, however led to a significant decrease in the harvested leaf size.

Nitrogen fertilizer application at 200 kg N ha^{-1} led to increased protein and total leaf yield. There was a significant increase in leaf nitrate concentration with an increase in the nitrogen level in both lamina and petiole. Nitrate accumulation in the petiole was 40 per cent higher than in the lamina. There was a significant reduction in both petiole and lamina nitrate as plant density increased from 62,000 to 252,000 plants ha^{-1} . Oxalic acid in the petioles was 46 per cent higher than in the lamina. There was a

significant increase in petiolar oxalate with an increase in the nitrogen level. However, in the lamina there was no significant increase. There were significant decreases in both lamina and petiole oxalate as plant density increased to 250,000 plants ha⁻¹.

In general, dasheen leaves are rich in protein, iron and calcium and compare favourably with other leafy vegetables such as cassava and amaranthus. However, further research should be conducted to ascertain the exact nature of the effects of agronomic variables, on oxalate and nitrate contents in dasheen, and to ascertain how long the recommended frequency of harvesting (three harvests every five weeks) could be continued before plant growth becomes seriously affected.