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Phosphorus affects Celosia (*Celosia argentea* L.) yield attributes and nutritional qualities in Africa humid tropics

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Abstract

There is dearth of Knowledge regarding influence of soil phosphorus (P) fertility to improve nutritional qualities in Celosia (*Celosia argentea*). Such information is important for identification, selection and breeding genotypes with high capabilities for using P in low-P soils of the African Tropics. This study was therefore conducted on the vegetable experimental grounds at Ibadan, Nigeria (7°30'N, 30°54'E, 168m a.s.l.) during the early and late rains of 2009. The study was conducted to determine the optimum P rate for Celosia seed yield attributes and nutritional qualities under field conditions. Combinations of P rates (0, 30, 60 and 90 kg P/ha) and three varieties (TLV 8, Purple, and Local) were studied in a 3 x 4 factorial arrangement fitted to a randomized block design. Results revealed that soil phosphorus fertility had significant effect on food components of Celosia seed, crude protein, starch, sugars, fiber, fat and vitamin C in both seasons. Seed weight was not significantly different among varieties but ranked TLV 8>Purple>Local in both seasons. Harvest index differed significantly among varieties and followed the order TLV 8>Purple> Local. All the food components except percent sugar differed significantly among varieties in both seasons. The effect of variety x P rate on seed quality components showed significant increase in 1000 grain weight with increased P up till 30kg P/ha in each variety, thereafter increased P did not affect significantly seed weight in both seasons. Similar pattern was observed for harvest index, crude protein, starch and ash. Percent fibre, fat and vitamin C (mg/100g) increased with increased P rates in each variety in both seasons up till 60kg P/ha, thereafter the values declined. We reached consensus therefore that soil P fertility affects yield attributes and nutritional qualities of Celosia seed significantly especially in the African Tropics.

Keywords: Phosphorus, fertility, Celosia, nutrition, tropics

Biography

David Ojo has completed his PhD at the age of 33 years from the University of Ibadan and postdoctoral studies from University of Hannover. He is the director of Research, Agribusiness and Consultancy Services at the Horticultural Research Institute, a government agency organization. He has published more than 85 papers in reputed journals and serving as an editorial board member of repute.