

## عنوان مقاله:

The potential of fermented cottonseed oil-mill effluent as inexpensive biofertilizers and its agronomic evaluation on medium-textured tropical soil

## محل انتشار:

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## خلاصه مقاله:

Purpose Upsurge of oil-mill industries and associated generation of wastewaters constitutes a huge environmental problem in Nigeria. As an option to reckless disposal, such effluents are often fermented and used as biofertilizers for nutrient-poor soils, but the potential of cottonseed oil mill effluent (COME) and agronomic evaluation of such potential has yet been studied. Methods A pot trial was conducted in northern Nigeria to assess the effects of COME fermented for 20 days and applied at five rates (0, 50, 100, 150 and 200 g 5-kg<sup>-1</sup> soil) on soil fertility 2 weeks after application and performance of African Spinach over the next 5 weeks. Results Soil pH increased steadily from 7.5 in unamended soil (control) to 8.0 at the maximum rate of fermented COME. Soil organic matter showed similar trend; from 16.7 to 27.7 g kg<sup>-1</sup>. Also, soil available nitrogen, available phosphorus and exchangeable potassium all indicated lowest values (0.28, 4.36 and 8.25 mg kg<sup>-1</sup>, respectively) in the control and the values increased steadily with increase in COME rate up to 0.47, 24.94 and 29.75 mg kg<sup>-1</sup>, respectively, at the maximum rate. By contrast, plant height, leaf area, number of leaves and fresh leaf yield of spinach were highest in the control and decreased with increase in COME rate until total inhibition of plant growth at C150 g 5-kg<sup>-1</sup> soil. Conclusion Fermentation of COME for 20 days before use permits the expression of its fertilizer value in soil; however, the fermentation level attained within this period translates into a sub-optimal detoxification status that is too low for crop growth.

## کلمات کلیدی:

Wastewaters Fermentation Organic amendment Soil fertility Plant growth

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