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Morpho-Physiological and Yield Response of Okra to Fertiliser Application and Weed Control Treatments

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Abstract

Okra (*Abelmoschus esculentus*) is one of the most important vegetables in Nigeria and many other tropical counties. It responds to fertiliser application but is highly sensitive to weed competition, thus weed control which is usually manually done should aim at reducing drudgery and maximising fertiliser use in the crop.

Two experiments were carried out at Ido, Nigeria to evaluate the effects of fertiliser application and weed control treatments on performance of okra. The trials consisted of main plot fertiliser application of 0 and 60 kg N ha^{-1} (NPK 20:10:10) while the sub-plots were five weed control treatments: (1) Pre-emergence herbicide (acetochlor plus prometryne) application at the rate of 1.2 kg active ingredient (a.i.) per ha and supplementary hoe-weeding, (2) hoe-weeded initially for 6 weeks, (3) weed infested initially for the first 6 weeks, (4) weed free and (5) weedy check (controls). The treatments were in split-plot arranged in randomised complete block design.

Fertiliser application and weed control treatments significantly influenced morphological and growth parameters, the chlorophyll content of the leaves and fruit yields. Uncontrolled weed growth for up to 6 weeks and weed infestation throughout the crop's lifecycle significantly ($p = 0.05$) reduced okra plant height, stem diameter and crop vigour in the two trials. Okra fresh weight reduction as a result of weed infestation for 6 weeks after sowing (WAS), pre-emergence herbicide and weed infestation throughout the crop's lifecycle treatments were 24, 31, and 77 % respectively in the first trial. In the second trial, weed infestation for 6 WAS and maximum weed interference caused 50 and 79 % reduction in fresh weight of the okra. Pre-emergence herbicide application with a supplementary hoe-weeding produced okra fresh weight of 67 % 9.57 t ha^{-1} and comparable to 14.22 t ha^{-1} from weed free for 6 WAS treatment.

Therefore, for effective weed control in okra production, pre-emergence application of acetochlor plus prometryn at the rate of 1.2 kg a.i. per ha with single supplementary hoe-weeding is recommended as an alternative to two hoe weeding at 3 and 6 WAS for the production of okra under similar fertility conditions.

Keywords: Fertiliser application, okra, pre-emergence herbicide, single hoe-weeding, weed control

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