Growth, Yield, and Economics of Okra and Amaranth Production Under Irrigation

D. A. Okunade¹, O. A. Olanusi,² and K. O. Adekalu²
¹School of Agriculture, Food and Rural Development, Newcastle University, Newcastle upon Tyne, UK
²Department of Agricultural Engineering, Obafemi Awolowo University, Ile-Ife, Nigeria

Abstract
Small-scale vegetable growers need investment and cost guidelines for irrigation systems in order to evaluate the economics and profitability of growing crops with irrigation. Growth, yield, and economics of producing okra and amaranth under four irrigation methods—basin, drip, furrow, and sprinkler—were evaluated. The experiment was conducted at the Teaching and Research Farm at Obafemi Awolowo University, Ile-Ife, Nigeria, on a sandy loam soil during the dry season. Plant heights and leaf area index were measured at different stages of plant growth; yield was measured at maturity. Fixed and variable costs of all the methods were estimated using results from field experiments and data collected from 50 farms, as well as from the State Agricultural Development Authority. Economic analyses of crop growth under the four methods were carried out. Results indicated that plants receiving drip and sprinkler irrigation had significantly higher yield than furrow and basin for both amaranth (Amaranthus cruentus L.) and okra (Abelmoschus esculentus (L.) Moench]. However, drip irrigation had higher water use efficiency than the sprinkler system for both crops; for okra, water use efficiency with furrow irrigation was significantly higher than that for basin irrigation. Partial budgeting indicated that all systems were profitable. However, basin irrigation had the least cost-benefit ratio and drip had the highest. Economic analyses indicated that a minimum of a 2½- and 3-year period would be needed to pay off fixed assets for drip irrigation for amaranth and okra, respectively. It is recommended that drip irrigation be used for production of amaranth and okra, especially where labor is neither readily available nor cheap. Copyright © Taylor & Francis Group, LLC
ISSN: 1931-5260 print / 1931-5279 online

KEYWORDS: Cost-benefit, Economics, Irrigation, Partial budgeting, Yield.

Address correspondence to: D. A. Okunade, School of Agriculture, Food and Rural Development, Newcastle University, King George VI Building, Newcastle upon Tyne, NE1 7RU, UK. E-mail: d.a.okunade@ncl.ac.uk

DOI: 10.1080/19315260802446401
http://dx.doi.org/10.1080/19315260802446401
http://www.informaworld.com/smpp/title~content=t792306876

International Journal of Vegetable Science,
Copyright © Taylor & Francis Group, LLC. All rights reserved.