Effect of stocking density on growth, production and economic benefits of Nile tilapia (Oreochromis niloticus) and African sharptooth catfish (Clarias gariepinus) in polyculture and monoculture.

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Abstract

On-farm fish production experiments were conducted for 240 days to investigate the effect of stocking density on growth, yield and economic benefits of Nile tilapia (Oreochromis niloticus) in monoculture and polyculture with African sharptooth catfish (Clarias gariepinus). Low stocking density (LSD), medium stocking density (MSD) and high stocking density (HSD) of 30 000, 60 000 and 90 000 fish ha−1 respectively, were tested. O. niloticus cultured in polyculture attained significantly higher mean weight gain than those cultured in monoculture. O. niloticus and C. gariepinus raised together in polyculture attained significantly higher net annual yield than O. niloticus cultured alone in monoculture. Profitability analysis using partial enterprise budgets revealed that polyculture is a more profitable system than monoculture. The highest growth, yield and economic benefits were achieved at HSD and MSD than at LSD with no significant difference between HSD and MSD. Results demonstrate that farmers can achieve the highest net yield and economic benefits by culturing O. niloticus and C. gariepinus in polyculture at HSD and MSD, preferably MSD for economic reasons.

Key Word polyculture, Nile tilapia, African sharptooth catfish, stocking density, growth,yield