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Rice Grain Yield as Affected by Grain-Producing Cover Crops in Cabo Delgado, Mozambique

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Abstract

Rice is considered a staple food for countries worldwide. Specifically in Mozambique, this grain can contribute to reduce poverty of 3.1 million people directly dependent of rice grains production and 20 million Mozambicans indirectly dependents. However, the rice grain yield in this country is very low, ranging from 970 kg ha^{-1} to 1170 kg ha^{-1}. The main reasons are the use of rudimentary techniques, limited knowledge, inefficient management of water and infrastructure, which keeps rice production in Mozambique, and in several African countries, in family subsistence levels. The inclusion of cover crops before rice cultivation besides providing benefits to the environment such as soil protection, release of nutrients, moisture maintenance and weed control, can increase rice production. The aim of this study was to evaluate the production of biomass and grain cover crops, yield components, and grain yield of rice in Mozambique. The study was conducted in two sites located in the province of Cabo Delgado, in Mozambique. The experimental design was a randomised block in a factorial 2×6, with four repetitions. Treatments were carried out in two locations (Cuaia and Nambaua) and 6 vegetation covers: Millet (*Pennisetum glaucum* L.); namarra bean (*Lablab purpureus* (L.) Sweet), velvet beans (*Mucuna pruriens* L.), oloco beans (*Vigna radiata* (L.) R. Wilczek), cowpea (*Vigna unguiculata* L.), and fallow. The cover crops *Lablab purpureus*, *Vigna unguiculata*, and *Mucuna pruriens* stood out in the production of biomass, being better for soil protection and for cycling nutrients. All covers provided similar results for rice grain production. The cover crop *V. unguiculata* showed to be the best as it had the highest grain production (1793 kg ha^{-1}). Rice grain yield in Nambaua (2594 kg ha^{-1}) was two times greater than average of Mozambique, while in Cuaia the grain yield (4509 kg ha^{-1}) was four times higher than the average grain yield of rice in Mozambique (1160 kg ha^{-1}).

Keywords: Conservation agriculture, grain production, legumes, sustainability

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