RICE RESEARCH AT IITA FOR THE ACID UPLAND SOILS OF WEST AFRICA

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ABSTRACT

The West African countries of Guinea (Bissau), Guinea (Conakry), Sierra Leone, Liberia and Ivory Coast grow upland rice as a major stable crop. The predominant soils types are infertile, acid Ultisols and Oxisols. Most rice is grown in the bush fallow system, in which burning of the forest temporarily boosts soil fertility and forest shade eliminates grassy weeds, allowing reasonably good yields without external inputs. However, due to population increase fallow periods are shortening and the inherent low soil fertility and grassy weed invasion are becoming major constraints. Poor N, P, Mg, and Si nutrition promotes blast and grain discoloration diseases. Farmers in this area have limited resources and therefore low input technologies to deal with these problems are being researched. Acid soil tolerant, japonica type semidwarf varieties have been developed with approximately 50% higher yield than local varieties under good weed control and application of 60 kg NPK/ha. No-till alley or inter-cropping with adapted leguminous shrubs is effective in eliminating tough grassy weeds, boosts soil fertility and reduces erosion. The rolling injection planting tool increases labor productivity and is appropriately designed for local fabrication. In combination with moderate fertilizer use, these technologies can increase the productivity, profitability and sustainability of upland rice on these poor soils.