

# Responses of Upland NERICA Rice to Nitrogen and Phosphorus in Forest Agroecosystems

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## Abstract

New Rice for Africa (NERICA) cultivars are widely adopted interspecific crosses between *Oryza sativa* and *O. glaberrima* but their responses to fertilizer was not known. In 2004 and 2005, four released NERICAs (NERICA 1,2,3,6) under two levels of phosphorus (0 and 2.6 g m<sup>-2</sup>) and four of nitrogen (0, 3, 6, and 12 g m<sup>-2</sup>) were evaluated on an acid Typic Haplustult at Ikenne (6°54' N, 3°42' E) in the Nigerian forest agroecosystem. In 2004, averaged over N levels, NERICA 3 attained physiological maturity most quickly (92 days after seeding [DAS]) at 2.6 g P m<sup>-2</sup>. But under drought stress (2005), although NERICA 3 was the first to initiate panicles (49 DAS) and to reach midflowering (73 DAS), maturity was delayed until 100 to 101 DAS with or without P. Also, in 2005, NERICA 6 took a much longer time to mature (110-111 DAS) than the other cultivars. Therefore, NERICAs 3 and 6 were the least suitable cultivars for low-input, drought-prone environments. At low N of 3 g m<sup>-2</sup> and zero P, paddy yield was highest in NERICA 1. With application of 12 g N m<sup>-2</sup>, NERICA 1 also yielded 20 to 41% more than the others, implying that it had a potential for tolerance to low N and was the most N-responsive among the cultivars evaluated under limited P. Moderate levels of N (6 g m<sup>-2</sup>) and P (2.6 g m<sup>-2</sup>) are recommended for NERICAs in smallholder low-input production systems.