

**GENETIC ASPECTS OF SEED AND SEEDLING VIGOUR
CHARACTERS IN INTER AND INTRA-SPECIFIC NEW RICE FOR
AFRICA (NERICA) RICE (*ORYZA SATIVA* L.) VARIETIES**

M.A. Ayo-Vaughan, M.A. Adebisi, and C. O. Alake

Department of Plant Breeding & Seed Technology,
Federal University of Agriculture, P.M.B. 2240, Abeokuta, Nigeria.

E-mail: folakevaughan@gmail.com; 08033432804

Abstract

Genetic studies were carried out on seed and seedling vigour characteristics of 17 newly-developed inter- and intra-specific New Rice for Africa (NERICA) rice varieties to estimate the genetic variation, determine the relationships amongst the characters and identify rapidly growing genotypes with robust seedling growth. Highly significant differences were observed between some genotypes for the measured characters except seed inhibition rate. The contribution of genetic variance (heritability) was highest for two seed characters [seed density (100%) and 100-seed weight (100%)] and was high (60.84 – 95.76%) for other characters except seed inhibition rate with 0.0% value. Strong positive genetic correlations were obtained between various seed and seedling vigour character measured. Due to the high correlation coefficients ($r = 0.55, 0.55, 0.36, 0.65, 0.80$ and 0.52 respectively) of standard germination and seedling emergence with plant height, seedling fresh and dry weights, seedling vigour I and II and seedling establishment, seedling emergence could be used as a single dependable selection criterion for identifying rapidly growing varieties. The principal component analysis showed that standard germination, plumule length, root length, seedling vigour I and II, 100-seed weight, plant height, seedling fresh and dry weights could be used as dependable selection criteria for seed seedling vigour improvement in these rice genotypes. Five varieties were identified with rapid seedling growth, however, the variety of special interest in terms of rapid growth was NERICA 6. This variety is highly promising for use in breeding for improved seedling vigour and chanced yield increase.

Keywords: Breeding; Correlation; Genotype; Heritability; Variation
