



COLCHICINE-INDUCED VARIABILITY ON GROWTH AND YIELD RELATED TRAITS OF M₂ GENERATION FONIO (*DIGITARIA EXILIS* [KIPPIST] STAFF) IN ZARIA, NIGERIA

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ABSTRACT

This research was conducted to evaluate the effect of various colchicine concentrations in induction of morphological variability that could be utilized in the genetic improvement of fonio (*Digitaria exilis*). Seeds of five accessions of fonio (Dinat, Jakah, Jiw 1, Jiw 2 and Nkpowas) were treated with five different colchicine concentrations (0.1 mM, 0.5 mM, 1.0 mM, 2.0 mM and 0.0 mM as control). The seeds were sown in a completely Randomized Block Design with three replications in a factorial arrangement to raise the first mutant generation (M₁ generation). The M₁ generation was advanced to second mutant generation (M₂ generation). The result obtained for the M₂ generation analysis showed highly significant differences ($P \leq 0.01$) in the effect of various colchicine concentrations on the growth and yield attributes of fonio. Accession Jiw 1 was found to respond more to colchicine treatments by yielding better results. There was an inverse relationship between colchicines concentrations and plants' response which means there is decrease in response with increase in concentration. Germination percent and height were found to be the traits to be used in selecting the accession with high yield. We therefore concluded that, 0.1 mM colchicine concentration could be used in the genetic improvement of fonio growth and yield.

Keywords: Colchicine, fonio, growth, yield

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