



THE AFRICAN ASSOCIATION OF INSECT SCIENTISTS

P. O. Box 59862, 00200 City Square
NAIROBI, KENYA



**18ème Conférence de l'Association Africaine des
Entomologistes**

**18th Conference of the African Association of Insect
Scientists**

Salle de Conférence du Ministère de l'Agriculture Ouaga 2000/
Conference room of the Ministry of Agriculture Ouaga 2000
OUAGADOUGOU, BURKINA FASO

16 - 20 Novembre / 16 - 20 November 2009

**“ Gestion des insectes ravageurs des cultures
et vecteurs de maladies pour un
environnement viable et une sécurité
alimentaire en Afrique: Développements
courants”**

**“Insect pest and vector management for
sustainable environment and food security in
Africa: Current developments”**

Programme

S2-19

REVISION OF PLOIDY LEVELS OF DIOSCOREA ALATA POLYPLOID SPECIES BY CYTOGENETIC AND MICROSATELLITE SEGREGATION ANALYSIS.

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Dioscorea alata is a polyploid species with several ploidy levels and its basic chromosome number has been considered by most authors to be $x = 10$. Standard chromosome counting and flow cytometry analysis were used to determine the chromosome number of 110 *D. alata* accessions of the CIRAD germplasm collection. The results revealed that 76% of accessions have $2n = 40$ chromosomes, 7% have $2n = 60$ chromosomes and 17% have $2n = 80$ chromosomes. Progenies were produced from $2n = 40$ types of *D. alata* and the segregation patterns of six microsatellite markers in four different progenies were analysed. The Bayesian method was used to test for diploid versus tetraploid (allo- and autotetraploid) modes of inheritance. The results provided the genetic evidence to establish the diploidy of plants with $2n = 40$ chromosomes and to support the hypothesis that plants with $2n = 40$, 60 and 80 chromosomes are diploids, triploids and tetraploids, respectively, and that the basic chromosome number of *D. alata* is $x = 20$. The findings obtained in the present study are significant for effective breeding programs, genetic diversity analysis and elucidation of the phylogeny and the species origin of *D. alata*.

Keywords: *Dioscorea alata*, polyploidy, microsatellite segregation, basic chromosome number