Inheritance patterns of tetraploid *Dioscorea alata* varieties

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Polyploidy is a crucial issue for yam improvement programmes. Recent studies have revealed that the basic chromosome number of the species *D. alata* is $x = 20$ and that accessions with $2n = 40$, 60 and 80 chromosomes are diploid, triploid and tetraploid, respectively, and not tetraploid, hexaploid and octoploid, as usually assumed. Tetraploid varieties ($2n = 80$) are of agronomic interest because of their high yield and vigour in the field, but there is no kown about their inheritance patterns. Studies based on the observation of meioses and characterisations of microsatellite marker segregation patterns are in progress to determine whether they are allo- or autotetraploids. A progeny of 500 offspring was produced from two genetically-distant tetraploid varieties by manual hybridisation. Segregation patterns of microsatellite markers were analysed using the Bayesian method. This method makes it possible to test different modes of inheritance and to determine the most probable segregation hypothesis. Preliminary results suggest that tetrasomic segregation is more likely than disomic segregation. These results are supported by a meiosis study on male progenitors that revealed some tetravalent pairing.

This knowledge is essential for improvement programmes and will make it possible to optimise breeding methods to obtain improved varieties.