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CYTOGENETIC AND CROSSABILITY STUDIES OF *EXACUM*

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Seventeen OTU's (Operational taxonomic units) belonging to 5 species of *Exacum*

were grown in a glasshouse at the Pennsylvania State University. Interspecific and intraspecific crosses were made in all possible combinations, including reciprocals, among the OTU's.

Meiotic and/or mitotic chromosome counts are reported for the first time for *E. macranthum* ($2n = 54$), *E. pallidum* ($2n = 52$), *E. trinervium* ($2n = 60$) and *E. pedunculatum* ($2n = 56$). With the exception of *E. trinervium* these species all appear to have homogeneous genomes. *E. affine* has $2n = 36$.

Of the 3 species in the *E. trinervium* complex, *E. macranthum* and *E. pallidum* are closely related. Despite the chromosome number differences, *E. macranthum* and *E. trinervium* were compatible. The compatibility may be attributed to the genome of their common ancestor. *E. pedunculatum* was rarely compatible and *E. affine* was incompatible with the *E. trinervium* complex.

It appears that the basic chromosome number for *Exacum* is $X = 9$, and that a polyploid series exists within the genus. An autopolyploid origin for *E. macranthum* and *E. pallidum* from a common ancestor, and an allopolyploid origin for *E. trinervium* are hypothesized.

Reference

Dyer, A.F. (1979) Investigating chromosomes. John Wiley, New York. 138 p.