

A detailed account of the above investigation will shortly be published elsewhere.

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¹ Sethna, Shah and Shah, *J.*, 1938, 228.

² Shah and Laiwalla, *Curr. Sci.*, 1936, 197.

Polyploid Plants produced by Colchicine and Acenaphthene.

By treating germinating seeds of various *Nicotiana* species and hybrids in 0.5 per cent. aqueous solution of colchicine for 20, 40 and 72 hours, deformed seedlings were raised, from which normal and slightly abnormal diploid and polyploid plants of the following species and species hybrids developed: *N. rustica* (in several varieties including the best variety "Khmelevka"), *N. Sanderæ*, *N. glauca*, F_1 hybrids *N. alata-Sanderæ*, F_1 hybrids *N. suaveolens* \times *alata*, F_1 hybrids *N. excelsior* \times *velutina*, F_1 hybrids produced from two varieties of *N. suaveolens*, etc. In all these species and hybrids, plants with doubled chromosome numbers were obtained, while in the hybrid *N. alata-Sanderæ*, octaploids were also produced. Sterile hybrids were rendered fertile by chromosome doubling. Tetraploid plants were also obtained in *Phlox* after colchicine treatment.

Treating germinating seeds of Salat (*Lactuca sativa*) with crystals of acenaphthene for six days, I obtained deformed seedlings from which vigorous plants developed. The control plants reached a size of $\frac{2}{3}$ to $\frac{3}{4}$ of the size of treated plants. In other words, acenaphthene has a very high stimulating activity. Among the treated plants with acenaphthene, I found one tetraploid. The latter plant began to flower about ten days later than the diploid treated plants, *i.e.*, it had a much longer vegetation period. This is a profitable character from the agricultural point of view.

Reagent tubes were covered from inside with crystals of acenaphthene. Shoots of various *Nicotiana* species were covered with such tubes and closed from downside with cotton and then left for several days (2-10). Some of the new branches formed from the

treated shoots were polyploid. I found in *Nicotiana longiflora*, for example, tetraploid

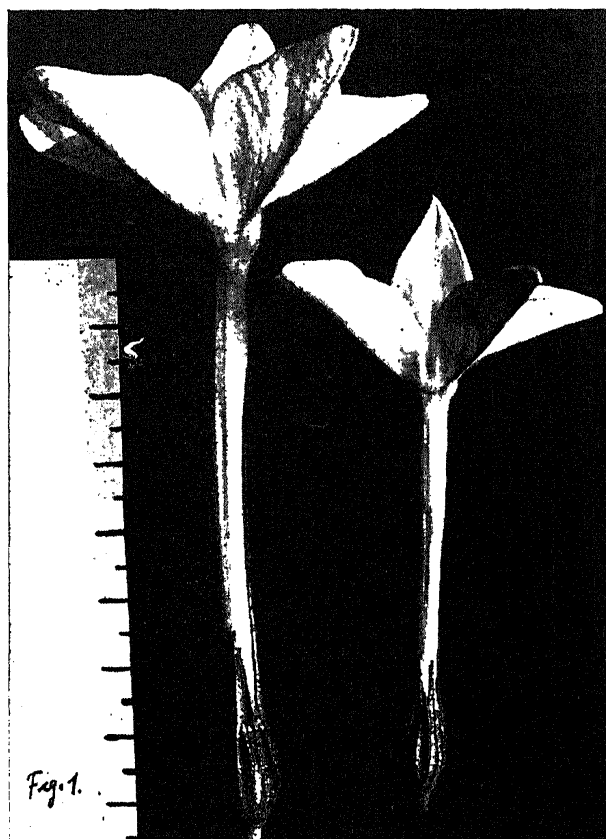


FIG. 1.

Flowers from tetraploid (left) and diploid (right) *N. alata* types.



FIG. 2.

Flowers from left to right: (1) from a tetraploid plant; (2) from a diploid plant of *N. suaveolens* varietal cross; (3) from a tetraploid *N. rustica*; and (4) from a diploid *N. rustica*.

and octaploid shoots. The chromosome numbers in the plants treated with acenaphthene and colchicine were determined in the pollen-mother cells.

Each polyploid plant produced in these experiments had longer vegetation period,