

## INDUCTION OF MALE STERILITY IN *SOLANUM KHASIANUM* CLARKE BY THE USE OF 2,4-DICHLOROPHENOXYACETIC ACID

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*Solanum khasianum*, a potential source of steroids, supplies the base material for the preparation of various sex hormones and corticosteroids and is used in the manufacture of oral contraceptive pills.

Concerted efforts are being made<sup>1-3</sup> to free the plant from thorns, to increase the glycoalkaloid 'solasodine' percentage in the berries and to improve the yield through breeding. Presence of numerous thorns on all parts of the plant including the sepals, hinders rapid emasculation and pollination of flowers.

During the course of an investigation on the effect of growth regulators on the growth and yield of *S. khasianum*, it was observed that after a spray of

10.0 ppm of 2,4-dichlorophenoxyacetic acid (2,4-D), given 50 days after transplanting, all the flowers produced had a rudimentary non-functional androecium and normal gynoecium. This effect lasted till the second spray was given, 30 days after the first spray. Thereafter, the treated plants continued to produce functionally male sterile flowers till the last picking (figure 1).

The percentage of fruit set in these plants was statistically on par with that of plants receiving 5.0 ppm of 2,4-D, as can be seen from table I. However, the fruits developed from these flowers were smaller, greener, and had fewer seeds (figure 2). Similar effects of 2,4-D have been reported in brinjal, *Solanum melongena*<sup>4, 6</sup>.

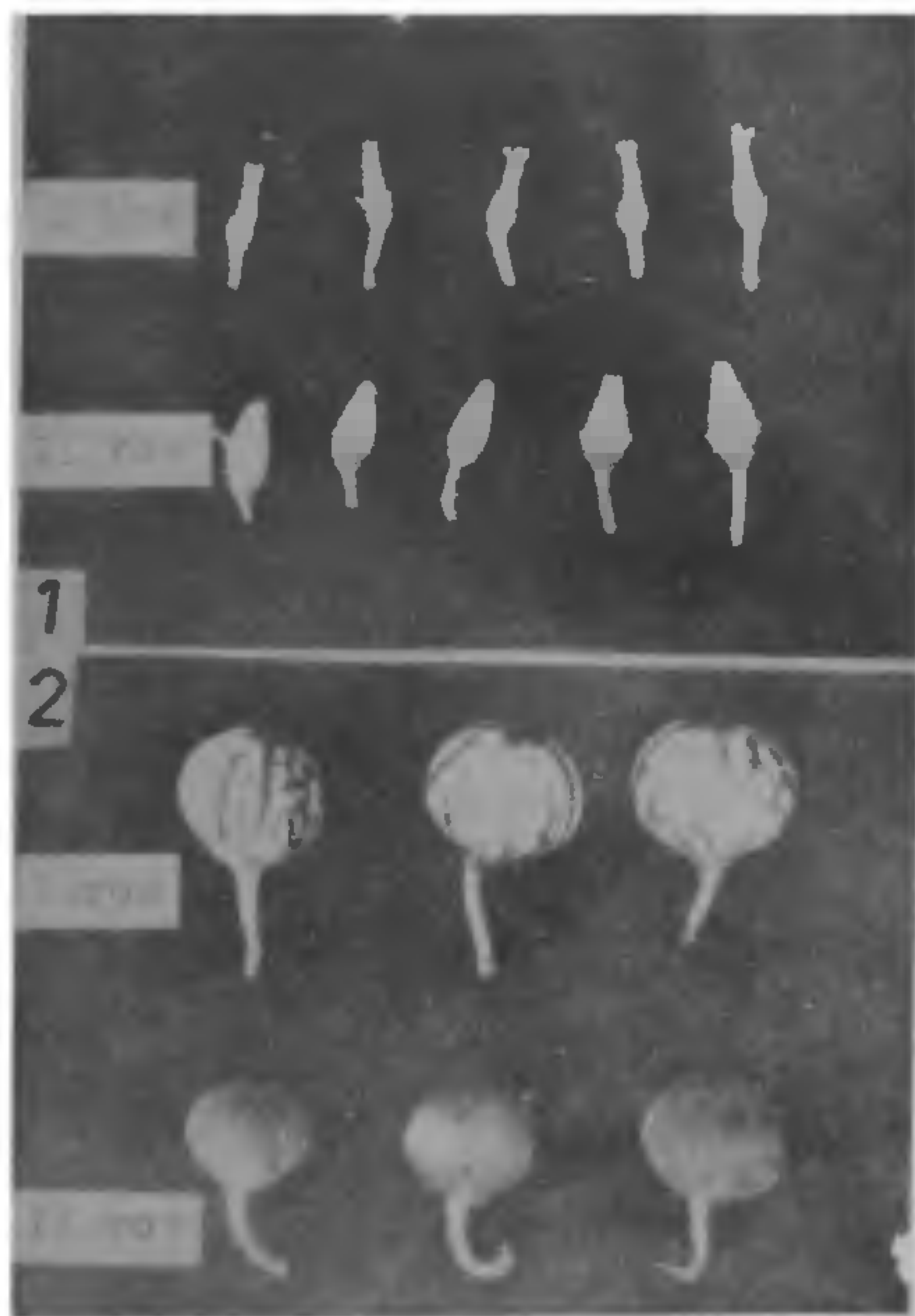
TABLE I

Treatment 2,4-D	Total No. of flowers/plant	Fruit set (%)
2.5 ppm	107.56 b	29.08 b
5.0 ppm	141.87 a	35.27 a
10.0 ppm	117.51 b	33.89 a
F. Test	**	*
C.D. at p = 0.05	13.55	4.16

The role of 2,4-D in bringing about the observed effect may be explained on the basis of the work of Heslop-Harrison<sup>7</sup>, which suggests that during flowering the formation of pistillate organs may be favoured by high auxin levels in the vicinity of differentiating primordia and of staminate organs by low auxin levels. This effect of 2,4-D can be effectively used for breeding and crop improvement of *S. khasianum*.

The research fellowship of Glaxo Laboratories, Bombay to undertake this study is gratefully acknowledged.

17 November 1981



Figures 1,2. 1. I Row: Male sterile flowers. II Row: Normal bisexual flowers. 2. I Row: Normal sized berries. II Row: Berries of reduced size.

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