inflorescence (26.66%) consisting of male and female flowers in the same catkin were also observed (figures 3 and 4). There were no bisexual flowers in the mixed inflorescence where male and female flowers were found on the same inflorescence. The pollen fertility in induced male flowers was determined by staining with 0.5% acetocarmine and Alexander's[5] staining method and was 65% and 61% in var Bilidevalaya and Kanva–2 respectively. Female inflorescences of control plants dusted with these pollen grains formed normal seeds confirming the fertility of the pollen from induced male flowers.

Silver in cationic form was more effective in induction of male flowers as evident from the earlier report in *Morus alba* var Kanva-2 than the anionic form. The present investigation clearly demonstrates that STS also triggers male sex expression in female plants of *M. alba* and *M. indica* probably by blocking the action of ethylene[6,7]. Chemical induction of male flowers in female cultivars can be used in reciprocal crosses and for raising the pure lines. Hence this technique will be highly rewarding in mulberry improvement programme.

11 June 1986; Revised 11 August 1986

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COLOUR POLYMORPHISM IN MUGA SILKMOTH *ANTHERAEA ASSAMA* WESTWOOD

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Colour polymorphism in insects has been attributed to a complex mixture of pigments[1], environmental, hormonal and genetical factors[2, 3]. Colour polymorphism has been previously reported in larval stages of all the four silkworm species viz *Bombyx mori* L[4], *Antheraea mylitta* Drury[5, 6], *Philosamia ricini* Hutt[1, 7] and *Antheraea assama* West[8]. However, the occurrence of colour morphs in the moth stage of *A. assama* has not been reported so far.

In a recent survey in the Jorhat District of Assam bordering the foot hills of Naga Hills (94° 46'E and 26° 9'N) a total of 127 wild muga cocoons were collected from *Machilus bombycina* King, the principal food plant of muga silkworm during February-March 1984. On emergence, the moths exhibited distinct colour variation and the population was a mixed type, 19 moths (12♂ and 7♀) were black, 5 (2♂ and 3♀) were intermediate and the rest (55♂ and 58♀) were brown (normal). The mixed population of moths was segregated based on colour pattern and inbred to isolate the pure lines. Since March 1984 five rearings were conducted until February 1985. The black colour of the moth appears to be a recessive character against brown colour (normal). The black moths do not exhibit any other morphological variation except in colour pattern and slightly larger wing expanse, body length and larval weight. The data recorded on morphological characters of the moth, larval weight, oviposition and fertilization rate and shell-ratio (table 1) indicate some differences among the black and brown moths.

The weight of the fifth instar larva, oviposition and fertilization rate and shell-ratio of the black and brown moths were compared and statistically analyzed. The weight of both male and female larvae and fertilization rate vary but not significantly. However, the rate of oviposition of the black moth is significantly higher ($P < 0.05\%$) than that of the brown moth. Also the shell-ratio of male cocoons of the black moth is significantly higher ($P < 0.01$) than the shell-ratio of the male cocoons of the brown

Table 1 *Quantitative character of the black and brown muga silkmoths*

Characters observed	Black moths		Brown moths (normal)	
	Male	Female	Male	Female
Maximum wing expanse (cm)	7.9 ± 0.52	7.5 ± 0.85	7.2 ± 0.4	7.0 ± 0.77
Body length (cm)	3.5 ± 0.42	4.0 ± 0.82	3.1 ± 0.6	3.5 ± 0.6
Weight of the mature larva (Gm)	16.5 ± 0.68NS	18.0 ± 0.59NS	11.0 ± 0.73	13.5 ± 0.68
Oviposition rate/ female	–	185.0 ± 11.0*	–	150.0 ± 10
Fertilization rate (%)	–	72.0 ± 5.0NS	–	64.0 ± 9.0
Shell-ratio (%)	9.1 ± 0.35**	8.3 ± 0.26NS	7.0 ± 0.17	6.5 ± 0.19

* Significant at 0.05% level, ** Significant at 0.01% level, N. S. – Not significant.

muga silkmoth. However, the shell-ratios of the female cocoons of black and brown muga silkmoths do not vary significantly.

The occurrence of colour morphs confirms the existence of natural variants in muga silkworm.

23 July 1986; Revised 19 October 1986

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