Sericologia 59 (1): 9-12 , 2019
ISSN 0250-3980

Research Paper

PROSPECTIVE HYBRIDS OF BULGARIAN UNI-BIVOLTINE SILKWORM BREEDS AND INDIAN POLYVOLTINE BREED, C. NICHI

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ABSTRACT

This study was carried out during the period, 2017 – 2018 at the Scientific Center on Sericulture, Vratsa, Bulgaria, as a part of an Indo-Bulgarian research project, involving utilization of the Indian polyvoltine silkworm breed C. Nichi. The project primarily aimed at instilling robustness into the breeding lines of Bulgaria. In the spring silkworm rearing season of 2017 (May/June), crosses between the Indian polyvoltine breed and Bulgarian uni-bivoltine breeds, Vratsa 35 and B1 of Japanese type and Merefa 2 and Svila 2 of Chinese type were made. During the autumn season of the same year (September/October), the pure Bulgarian breeds were reared along with the newly generated F_1 crosses. The autumn rearing season in Bulgaria is less favorable due to the worse mulberry leaf quality. The F_1 crosses between the Bulgarian uni-bivoltine breeds and C. Nichi manifested much higher pupation rate but lower fresh cocoon and silk shell weight and shell percentage compared with the pure uni-bivoltine breeds. The selected individuals from the F_1 crosses were back-crossed with highly productive Bulgarian pure uni-bivoltine breeds and further tested in the spring season of 2018. The results revealed that the backcrosses with uni-bivoltine breeds of the Japanese type *i.e.*, ♀ (B1 x C. Nichi) x ♂ Vratsa 35 and its reciprocal, had cocoon weight values close to, and silk shell weight and shell percentage lower than those of parental uni-bivoltine breeds, while the backcrosses with the Chinese type uni-bivoltine breeds [♀ (Svila 2 x C. Nichi) x ♂ Merefa 2 and its reciprocal] manifested higher cocoon weight (2344 mg and 2346 mg), silk shell weight (452 mg and 451 mg) values at par and lower shell percentage (19.28 and 19.22), compared with that of the pure uni-bivoltine breeds. It may be concluded that the hybrid population between Bulgarian uni-bivoltine pure breeds and Indian polyvoltine breed C. Nichi are promising for further breeding programme.

Key words: *Bombyx mori* L., breeds, crosses, polyvoltine, silkworm, uni-bivoltine.