

Mapping of major quantitative trait loci for economic traits of silkworm cocoon

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Genet. Mol. Res. 9 (1): 78-88 (2010)

Received August 25, 2009

Accepted October 21, 2009

Published January 19, 2010

ABSTRACT. The quantitative trait loci (QTLs) associated with cocoon traits in silkworms were mapped in 44 individuals of a backcross of Dazao females with hybrid F₁ males; the hybrid males were from females of inbred C₁₀₀ strain, which have white cocoons and superior cocoon traits, crossed with males of inbred strain Dazao, which have green cocoons and inferior cocoon traits. Nineteen putative major QTLs of silkworm cocoon traits, five QTLs of whole cocoon weight, four QTLs of cocoon shell weight, six QTLs of pupa weight, and four QTLs of cocoon shell rate were scattered across nine linkage groups. The variances explained by QTLs for whole cocoon weight, cocoon shell weight, pupa weight, and cocoon shell rate were 51.0, 73.69, 51.80, and 59.52%, respectively. The numbers of major QTLs

with contributions above 10% for these traits were two, three, two, and four, respectively.

Key words: *Bombyx mori*; Economic traits; Silkworm cocoon; Composite interval mapping; Quantitative trait loci