

Cross-mating with Other Color Patterns of the Multicolored Asian Ladybird, *Harmonia axyridis* (Col.: Coccinellidae)

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One of the surprising features of ladybirds is that some species are very variable in color pattern, while others are relatively uniform. In case of *Harmonia axyridis*, it has been called the multicolored Asian ladybird beetle.

Early studies have considered color polymorphism in coccinellids in terms of geographical clines, while a few investigated temporal populations. Nevertheless, note that geographical and temporal morph variation does not always correspond to what is expected from thermal and industrial adaptation theories. However, there is as yet no evidence to indicate whether the variation is genetic or environmental factors. Also the factors which produce this variation are unknown in many species, although it is suspected that much of the variation is under genetic control.

Therefore, in this study, the genetic relationships among many of color types studied by looking at the progeny which was produced from particular pairs. It is worth mentioning a few particular cases to illustrate certain facets of variability, and to indicate examples suitable for genetic analysis of the variation.

As results, ladybirds can be genetically changed during rearing, particularly if sampling limitations have truncated the genetic base, or if a laboratory colony has undergone long term rearing. Such the biological control agent may be inefficient after inoculate or inundate release owing to the small number of individuals and fecundities. The genetic quality of reared insects should therefore be monitored periodically and restored if it has been negatively altered. Therefore, if results of breed experiment are considered, successful biological control may be accomplished.