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*Research Paper*

## DEVELOPMENT OF OPTICAL IMAGING TECHNIQUE FOR THE IDENTIFICATION OF MATURE 5<sup>TH</sup> INSTAR MUGA LARVA (*ANTHRAEA ASSAMENSIS HELFER*)

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### ABSTRACT

The cycle of muga culture consists of four distinct phases of activities such as (i) collection and hatching of eggs (ii) feeding and growth of larvae from 1<sup>st</sup> to 5<sup>th</sup> instar (iii) cocoon spinning and (iv) emergence of moth. In addition, reeling of muga cocoon is practiced by some muga farmers as an additional means of income. In muga farming, the 5<sup>th</sup> larval instar is a vital decision making stage, where the mature muga larva has to be identified and separated from immature ones in the collected lots to ensure recycling of the immature muga larvae back to their feeding zone. In this backdrop, an optical imaging technique has been developed for determining the maturity level of muga larvae (*Antheraea assamensis* Helfer) at its 5<sup>th</sup> instar. Since this is otherwise a laborious and time consuming task, the new technique would ensure quick and proper selection and collection of mature muga larvae during a cultivation period. Moreover, it also paves way for the improvement in quality of the thread because of the least interruption from immature larvae during spinning.

**Key words:** *Antheraea assamensis*, muga, optical characteristic, sericigenous insect, silk.