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*Research Paper*

# DEVELOPMENT OF MICROCONTROLLER BASED EMBEDDED SYSTEM FOR DETECTION OF MATURE MUGA LARVAE

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## ABSTRACT

This paper describes a system developed for identification of mature muga larvae (*Antheraea assamensis* HELFER) based on the measurement of its optical transmissibility. Traditional methods of identification of maturity are based on intuition gathered through long experience and characterized by significant time delay in the collection process. The microcontroller based embedded system used for this purpose provides a quantitative measure of optical transmissibility of muga larvae through a potential divider circuit consisting of a light dependent resistor as a sensor unit. An inclined plastic tube containing light emitting diode as a source of light and light dependent resistor as a sensor was used where muga larvae are guided between the light source and the sensor. The power associated with the beam of light transmitted through a muga larva is proportional to the maturity level of the larva. In this system, the beam emerging out of a muga larva is captured by the sensor based potential divider circuit that produced a proportional average numerical value of optical transmissibility as 50 % for the mature samples whereas 8.34 % for the immature samples. Thus this study innovatively establishes a microcontroller based machine intelligence to distinctly identify maturity of muga larvae. The system can reduce physical labor during collection of 5$^{th}$ instar muga larvae and enhance productivity.

**Key words:** *Antheraea assamensis* Helfer, Assam silk, muga, optical transmissibility, sensor, sericigenous insect.