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# A New Technique for Mass Rearing of Green Lacewing on Commercial Scale

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**Abstract:** A comprehensive study was carried out on mass rearing of Green Lacewing, *Chrysoperla carnea* (Stephen) (Chrysopidae: Neuroptera) with the objective to rear the cannibalistic larvae in a simplest and economical way and to wipeout the use of anesthesia (carbon dioxide), vacuum sucker in adult handling and other problems viz. cleaning and sanitation of adult rearing cage, ventilation and illumination in the cage, use of chemical for harvesting of eggs on black organdy and diapause phenomena of adults due to humidity below 35 percent. The difficulties in field releases of the voracious predator viz. reduced viability of eggs during chemical harvesting, ill defined field applications and high predation of stalk less eggs in the field were also target of the research studies.

**Key Words:** Green Lacewing, *Chrysoperla carnea*, Cannibalistic Larvae

## Introduction

**Rearing of Larvae:** The larvae of *C. carnea* were reared in hard gelatin capsules of medium size (Fig. I) on single feeding and less food viz. eggs of Angoumois grain moth, *Sitotroga cerealella*, instead of the multiple feedings of more food in case of old techniques. Weighed quantity of the food eggs (chilled) and grey eggs of the predator were blended gently with camel hair brush in a container. The mixture of food and predator eggs was filled in the capsules weighed as 60 milligrams per capsule. The filled capsules were kept packed in polythene bag of suitable size to reduce the effects of external moisture on the integrity of the capsule at temperature 27± 2°C and relative humidity 60 ± 5 percent. After 10 days the capsules were opened to reap out the pupae formed inside the capsules. Ninety eight percent of the capsules were found having one or more pupae. The capsules' halves having pupae cocoons were placed in Petri plate for adult emergence and were covered with lid. There were 140 pupae per hundred capsules with one, two and three pupae inside 62, 30 and six percent capsules respectively. The adults emerged were 99 percent and none was deformed.

**Rearing of Adult:** Adult moths were reared in rectangular transparent cage made of six millimeter thick transparent plastic sheet. The cage (Fig.2) having length 35 centimeter, height 35 centimeter and width 20 centimeter was particularly designed to keep 200 moths inside and to harvest eggs more than one thousand per day. Two circular windows each of 13 centimeter diameters covered with lids of same material situated diagonally near opposite corners of front wall of the cage were made for moth handling purposes viz. cleaning and sanitation, provision of water in Petri plate for moths and releasing of moths newly emerged in Petri plate. Adult food viz. mixture of yeast, water and honey was offered to adult moths in small food bowls of diameter 0.5 centimeter engraved in upper side of two plastic rods each four millimeter thick and 22 centimeter long, running widthwise at the two opposite ends inside the cage where feeding of moths was maximum. A sieve of circular holes diameter 2 millimeter was drilled into the sidewalls to ensure proper ventilation in the cage for better survival and fecundity of moths. Granulated dark colored paper underside the removable top of the new cage was real substitute of black organdy on the top of ordinary cage as oviposition substrate with other advantages viz. eggs can be removed easily with razor in contrast chemical harvesting, the stalked eggs on paper can be applied in field as paper strips so natural defense against predation is conserved. The pupae formed in capsules can be released in crops without causing them damage during handling that is not possible by old techniques. High humidity maintained by water in Petri plate inside the new cage and well illumination due to transparent material of the cage prevent the moths to undergo into diapause phenomena. By the new mass rearing techniques handling of larvae and adult moths of *C. carenea* has become very simple and cheaper. There is no wastage of food in the gelatin capsule due to desiccation as it was big draw-back in old techniques. Use of chemicals viz. Sodium hypochlorite and Potassium hypochlorite, and use of anesthesia and vacuum sucker have been completely eliminated. Field release has become simple with reduced uncertainty. Transportation of the insect becomes more feasible in the form of grown larvae and pupae inside capsule.

Fig. 1: Rearing of Larvae in Gelatin Capsule

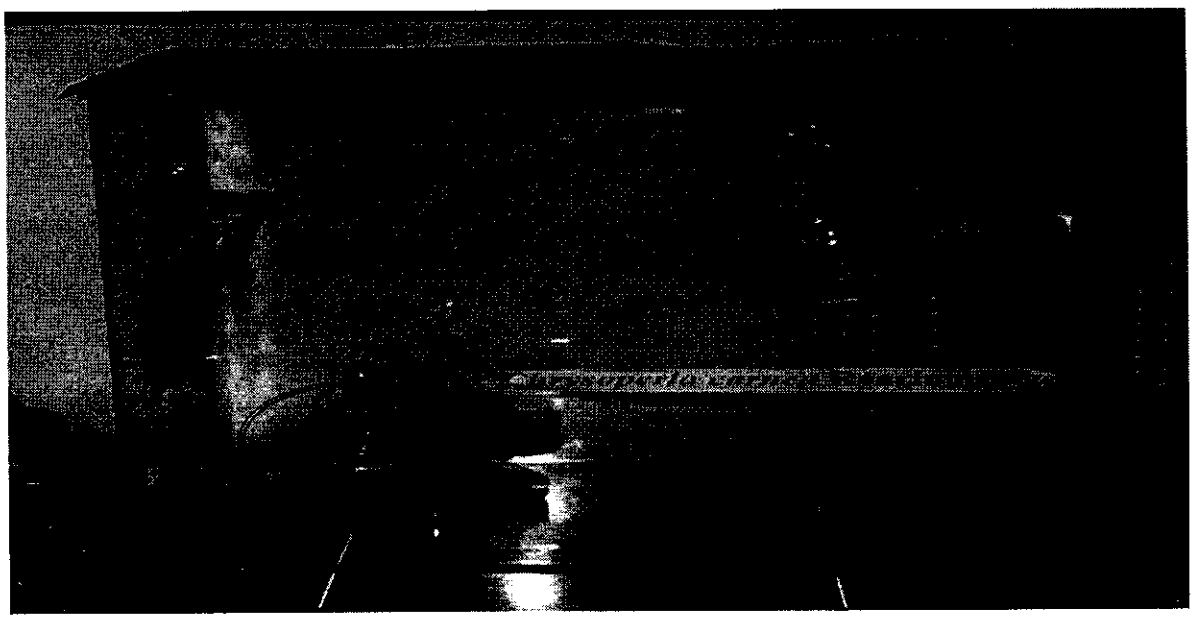

Fig. 2: New Rearing Cage for Adults