

Research Note

Colour preference of female green lacewing, *Chrysoperla* sp. (Neuroptera: Chrysopidae) for egg laying under laboratory conditions

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ABSTRACT: Colour preference of female green lace wing, *Chrysoperla* sp. (Neuroptera: Chrysopidae) for egg laying under laboratory conditions were tested in the Bio-control Laboratory, IGKV, Raipur during 2018-19. Females of *Chrysoperla* sp. visually distinguished different colours viz., green, white, brown, black, red and pink coloured substrate for egg laying. In the present studies, among the colours tested, *Chrysoperla* sp. females preferred black colour as substrate for egg laying and laid an average maximum of 36.36 eggs followed by green colour (31.78), white colour (22.94), pink colour (20.81), red colour (20.42), brown colour (14.00), respectively. Thus, for the mass multiplication of *Chrysoperla* sp., under laboratory conditions, black coloured cloth/paper can be used.

KEY WORDS: Colour preference, green lacewing, oviposition

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Lacewings are important polyphagous predators of the Order Neuroptera and family Chrysopidae. This order consists of a group of insects with rather soft bodies, biting mouthparts and two pairs of very similar membranous wings which are usually held roof-like along the abdomen at rest.

In India, about 65 species of lacewings belonging to 21 genera have been recorded from various agricultural, horticultural and agro-forestry cropping systems (Henry *et al.*, 2010), out of these, *Chrysoperla* is the most dominant genera, containing several species which are widely used in augmentation programme (Gautam, 1994). The common green lacewing, *Chrysoperla* spp. also known as ‘golden eye’ or ‘aphid lion’ is the most important species, found predating on a broad range of prey including several soft bodied insect pests viz., aphids, scales, thrips, mealybugs, whiteflies, mites and eggs and neonate larvae of several lepidopteran pests and has high tolerance to various groups of pesticides (Ahmed *et al.*, 2012, Tauber *et al.*, 2000). Their agricultural importance lies in their carnivorous habits. Chrysopid predators are known to feed on more than 80 species of insects and 12 species of mites (Kharizanov and Babrikova, 1978). A single grub may devour as many as five hundred aphids in its life time and there is no doubt that they play an important part in the natural control of many small homopteran pests (Michaud, 2001, Legaspi *et al.*, 1994). It has long been considered as a

promising candidate for the pest management programs in India due to its wide prey range, geographical distribution, resistance to insecticides, voracious larval feeding capacity and commercial availability (Tauber *et al.*, 2000, Venkatesan *et al.*, 2008) and easy mass multiplication under laboratory conditions (Araujo and Bichao, 1990).

There is a great scope to explore the use of *Chrysoperla* sp. in the management of nymphs and adults of hemipteran insects on field crops as well as horticultural crops. With the above facts, the present study entitled “To test colour preference of female green lace wing, *Chrysoperla* sp., (Neuroptera: Chrysopidae) for egg laying under laboratory conditions” was framed and carried out at Biocontrol Laboratory, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during 2018-19.

The experiment was conducted at the Biological Control Laboratory, Department of Entomology, College of Agriculture, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.) during the year 2018-2019. The cultures were maintained at 27±1 °C temperature and 65±5% of Relative Humidity (RH). Techniques adopted to test colour preference of female green lace wing, *Chrysoperla* sp., (Neuroptera: Chrysopidae) for egg laying under laboratory conditions are given below:

Rearing of the predator, *Chrysoperla* sp.

Nucleus culture was maintained in the Biological Control Laboratory, Department of Entomology, IGKV, Raipur as per the standard set of procedure given by Gautam (1994). Adults were transferred to glass jar and fed with honey-water solution (50%) which was applied by dipping cotton balls in it. The glass jar was covered with black and white muslin cloth. Females laid stalked eggs on the inner surface of the cloth. For initial three weeks, the cloth was changed every alternate day and later cloth was changed once in three days. The stalked eggs laid by the females on roof board were destalked after 24 hours by gently brushing with a piece of sponge and kept in plastic or glass jar (15 × 8 cm) covered with black and white muslin cloth.

Colour preference of female *chrysoperla* sp. for egg laying

For testing the colour preference for egg laying of *Chrysoperla* sp. male and female were paired and kept confined in glass jars (15 x 8 cm). The glass jars were

provided with different coloured cloth strips such as white, green, black, brown, red and pink and covered with. 15 Females were allowed to mate and lay eggs fed with 50 per cent honey-water solution which was applied by dipping cotton balls. Females laid stalked eggs on the cloth. Eggs laid on the cloth strips and inner side of rearing glass jar were collected and counted carefully (Plate 1). This experiment was replicated five times. The data collected on colour preference of female *Chrysoperla* sp. for egg laying were analysed by using appropriate statistical methods (OPSTAT).

The results regarding to test colour preference of female green lace wing, *Chrysoperla* sp., (Neuroptera: Chrysopidae) for egg laying under laboratory conditions revealed that *Chrysoperla* sp. females visually distinguished different colours viz., green, white, brown, black, red and pink preferred certain colours as a substrate for egg laying. Among all colours, *Chrysoperla* sp. females preferred black colour as a substrate for egg laying and laid the average of maximum (36.36) eggs followed by green colour (31.78), white colour (22.94), pink colour (20.81), red colour (20.42),

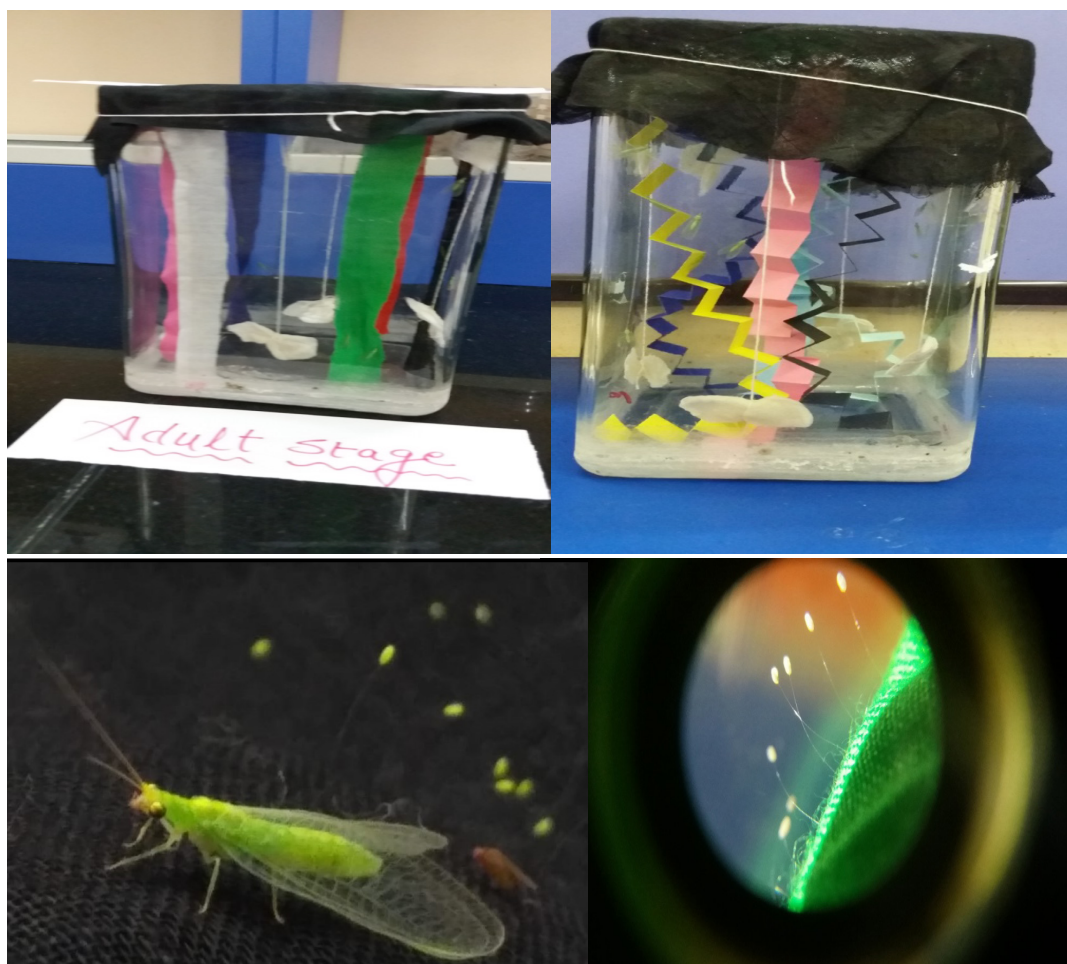
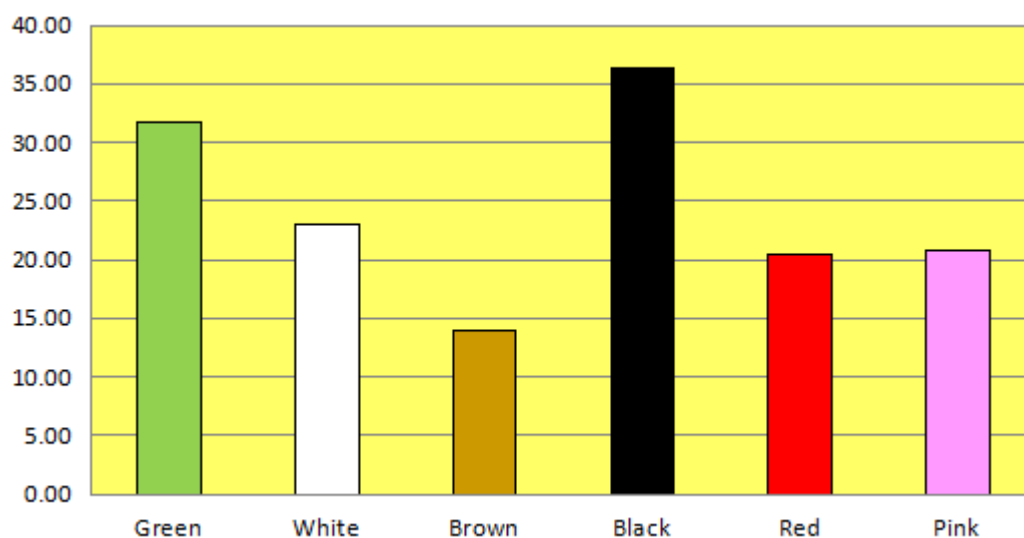


Plate 1: To test the colour preference of female *Chrysoperla* sp. for egg laying under laboratory conditions.

Table 1. To test colour preference of female *Chrysoperla* sp. for egg laying under laboratory conditions. (Mean±SE)

Sr. No.	Colour	R1	R2	R3	Mean (SE)
1.	Green	32.08	34.08	29.17	31.78 (5.722)
2.	White	24.67	20.83	23.33	22.94 (4.89)
3.	Brown	13.08	15.92	13	14.00 (3.869)
4.	Black	38.83	35.58	34.67	36.36 (6.111)
5.	Red	20.33	21.75	19.17	20.42 (4.626)
6.	Pink	20.25	19.33	22.83	20.81 (4.667)
	C.D.	-	-	-	0.344
	SE(m)	-	-	-	0.111

**Fig. 1.** Colour preference for egg laying of *Chrysoperla* sp.

brown colour (14.00) respectively (Table 1 and fig. 1). Similar findings were observed by Sattar and Abro (2011), in which they also found that among all colours tested, females preferred black colour as a substrate for egg-laying and laid the highest number of eggs followed by green colour and lowest laid on yellow colour.

CONCLUSION

Thus, in the present studies, *Chrysoperla* sp. females visually distinguished different colours viz., green, white, brown, black, red and pink and preferred certain colours as a substrate for egg laying. Among all colours, *Chrysoperla* sp. females preferred black colour as a substrate for egg laying and laid maximum (36.36) eggs followed by green colour

(31.78), white colour (22.94), pink colour (20.81), red colour (20.42), brown colour (14.00), respectively.

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